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FUJITSU COMPUTERS SIEMENS

PRIMERGY rack systems Design guide

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Product Rack Systems

Pages 89

Introduction and highlights

Rack systems are based on the EIA-310-D 19-inch standard, according to which rack cabinets, servers and other components, such as UPSs, hubs, routers, modems and operating consoles, are manufactured. The term “standard” suggests a specification and definition of all prevalent dimensions and construction requirements relating to the mechanics and electrical equipment of these rack systems. In fact, only a few dimensions and weights are truly specified in this quasi-standard: various specifications can be interpreted too broadly, there is also a lack of tolerances in some cases, and many a dimension is not even included in the 19-inch “standard”.

The problems and incompatibilities in the installation dimensions of competitor products and components from third-party vendors have always been taken into account in PRIMERGY rack systems. The PRIMECENTER rack family at the latest provides a universal and variable rack system which can accommodate most of the 19-inch components on the market without problems. Unfortunately, there will always be cases where the inaccuracy of the 19-inch standard causes problems, in particular when products from different manufacturers are to be combined.

This document is designed to facilitate the integration of PRIMERGY systems in third-party racks and the installation of third-party systems into racks from Fujitsu Siemens Computers by showing the installation requirements and the dimensions.

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1 Terms and conditions

1.1 Liability and warranty

In principle, specific responsibilities must be observed in integrating components to create an overall system. They include compliance with country-specific and international regulations and provisions, such as electrical and electromagnetic behavior, safety regulations and operating conditions. The party integrating components from different vendors therefore bears responsibility, and is consequently liable for and warrants the integration work that has been carried out.

1.2 Installation rules

A broad range of servers means a large variety of combinations in the rack and the requirement that every server be operated within its thermal limits. To avoid every possible configuration having to be assessed separately, rules for installing servers and components in the racks have been established:

1. Every server is independent in its height unit(s) and respects the independence of neighboring servers.

2. Every server must be able to function with the resources of its height unit(s) (cooling, cable management, maintenance space, etc.).

These two rules restrict the creativity of developers of servers and rack-mounted systems to the height unit(s) required by the server, yet permit different solutions to coexist.

A thermal assessment of a server in the rack must take into account the following PRIMERGY servers cooling concept:

1.3 Thermal qualification

The following thermal conditions must be taken into account:

- A PRIMERGY server is cooled by an air current that is generated by fans within the server. Any emission of thermal energy is regarded as negligible and consequently does not contribute to cooling the server. In the same way, any possible supply of energy from thermal radiation is regarded as negligible and is ruled out.

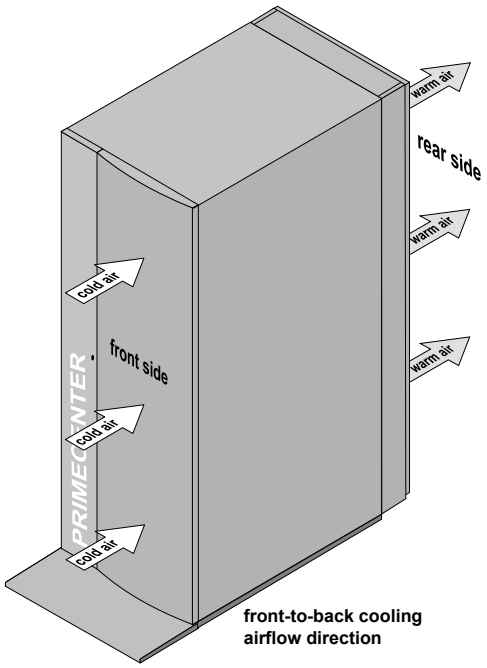
- The front 19” plane is defined as a climatic boundary between the intake air and exhaust air of the rack or the server.

Therefore the following applies:

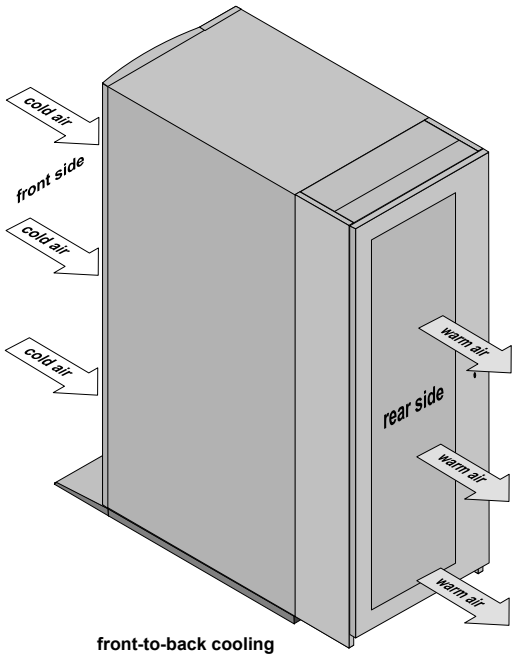
1. Following mounting of the server in a rack, the intake air area is defined as being the boundaries of the height units it occupies.

2. The floor and cover surfaces of the server are defined as adiabatic surfaces, i.e. thermal energy is not exchanged via the floor or ground surface. This prevents any influence from servers mounted above or below.

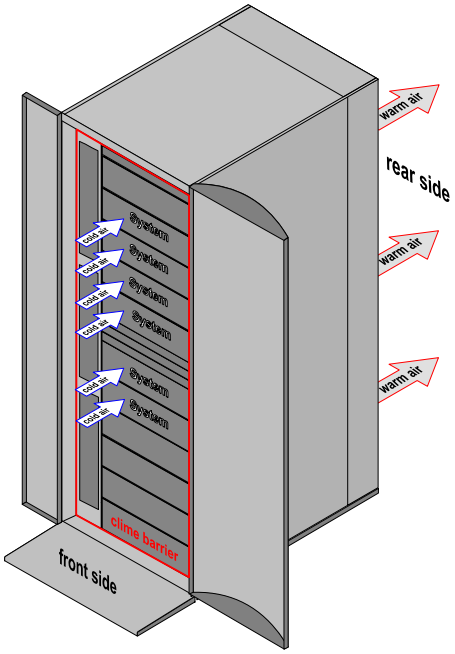
In cabling the server, the rack infrastructure is used optimally and the exhaust air area of the server is kept free to the maximum possible extent.



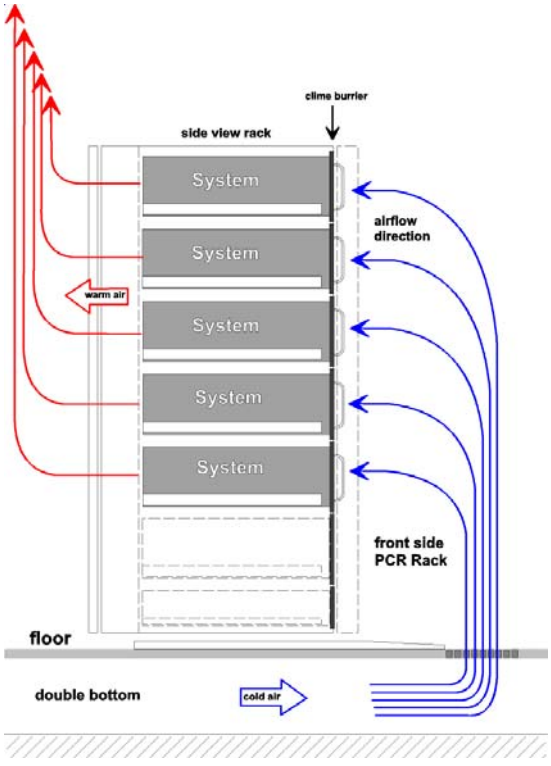
front-to-back cooling
airflow direction



front-to-back cooling



Any free slots must be closed with dummy panels (air-conditioning barrier in front area of the rack).



1.4 Analyzed configurations

As already indicated in the introduction, two cases are described in this document:

1. PRIMERGY servers or storage subsystems are to be integrated in racks from other manufacturers, possibly in coexistence with servers or storage systems from different vendors.
2. Servers, subsystems or infrastructure components (UPSs, switches, hubs) from third-party vendors are to be mounted in PRIMECENTER and PRIMERGY DataCenter racks.

These two cases must be viewed separately, namely with respect to:

- Installation dimensions of the systems, including cabling spaces and conditions relating to serviceability
- Cabling conditions and requirements
- Availability of mounting accessories and safety of mounting

This can result is a wide range of installation requirements. However, not all cases can be analyzed individually; the market in the 19-inch segment is simply too large. We are consequently focusing on products from Fujitsu Siemens Computers and the associated rack systems.

All PRIMERGY systems are developed on the basis of the same design principles. As a consequence, this analysis of the installation of PRIMERGY components is reduced to the essentials.

1.5 General suitability for installation

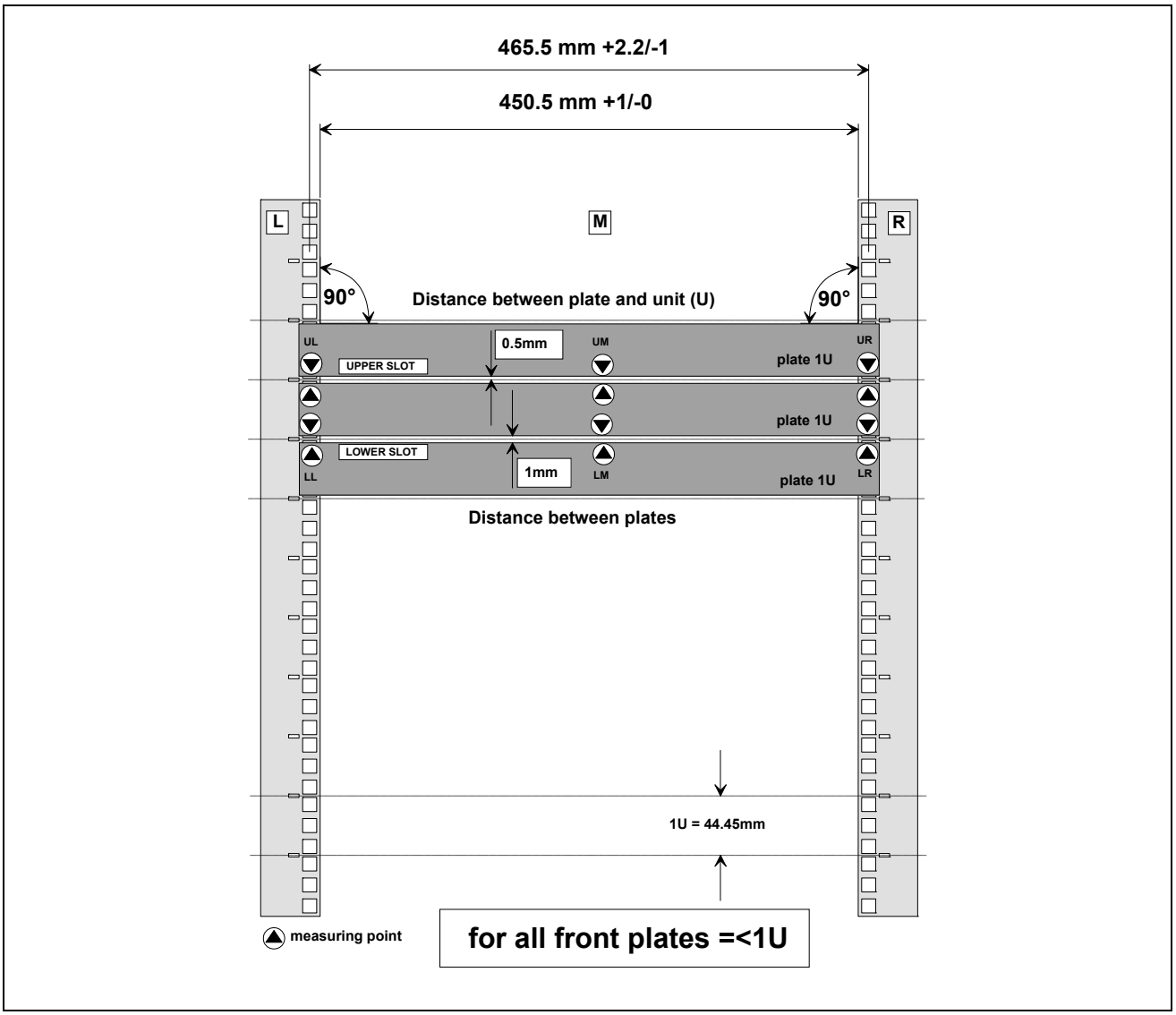
Installation of third-party products in PRIMERGY racks (EIA-310-D 19-inch standard)

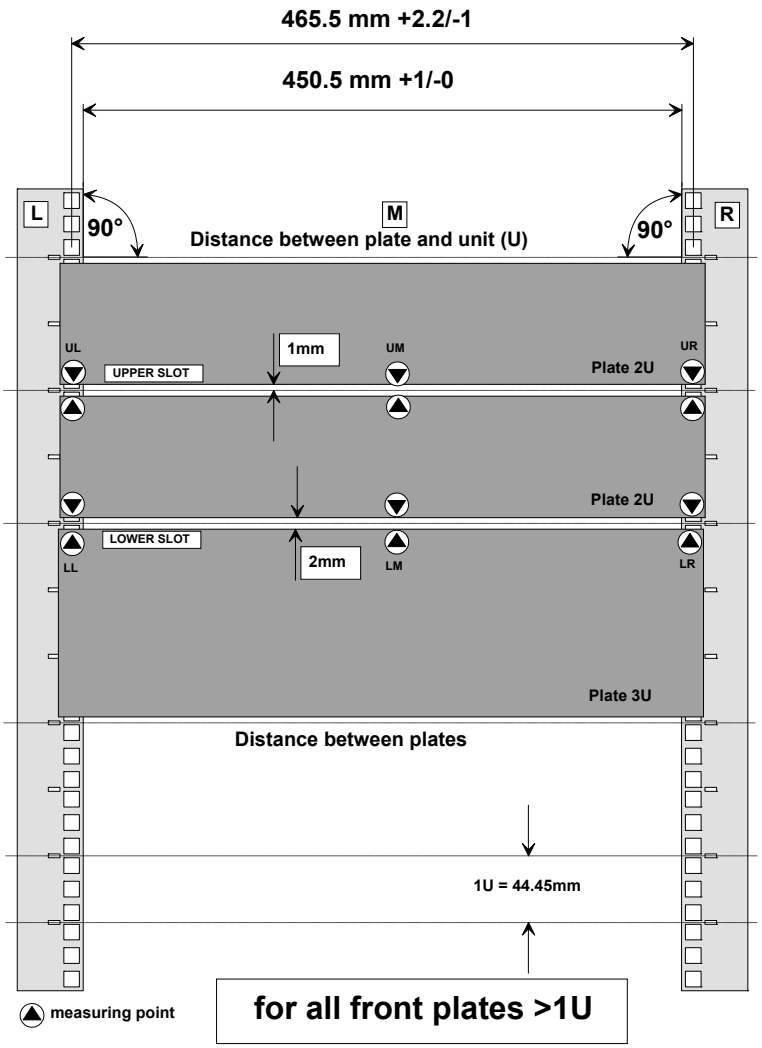
2 Installation dimensions

The dimension that is guaranteed as reliable by all rack manufacturers is the installation width of 19” (Rw > 450 mm). So that this dimension can be respected in all cases, the housing width Hw is limited to a maximum of 448 mm for FSC products.

The height dimensions are guidelines for ensuring smooth installation or insertion. They are always relative to the start or the end of a height unit U (1 U = 44.45 mm).

Assuming a space of one U, the following tolerance dimensions exist:

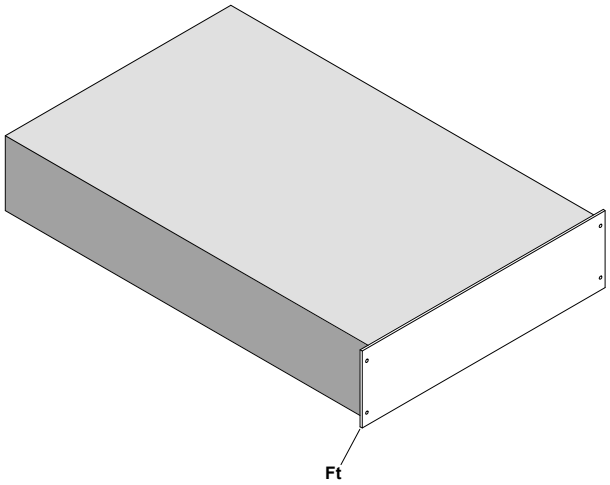



465.5 mm +2.2/-1
450.5 mm +1/-0
L
M
R
90°
90°
Distance between plate and unit (U)
UL
UM
UR
1mm
UPPER SLOT
Plate 2U
Plate 2U
LOWER SLOT
2mm
LL
LM
LR
Plate 3U
Distance between plates
1U = 44.45mm
measuring point
for all front plates >1U

3 Front plate design

3.1 Front plate dimensions, table and drawings

The figure and table below specify the most important dimensions for front plate design.



Ft --- Front plate thickness (FSC) = 4mm
Hw --- Housing width = 448mm
Mh --- Distance between the horizontal mounting holes 465.1mm +-1.6

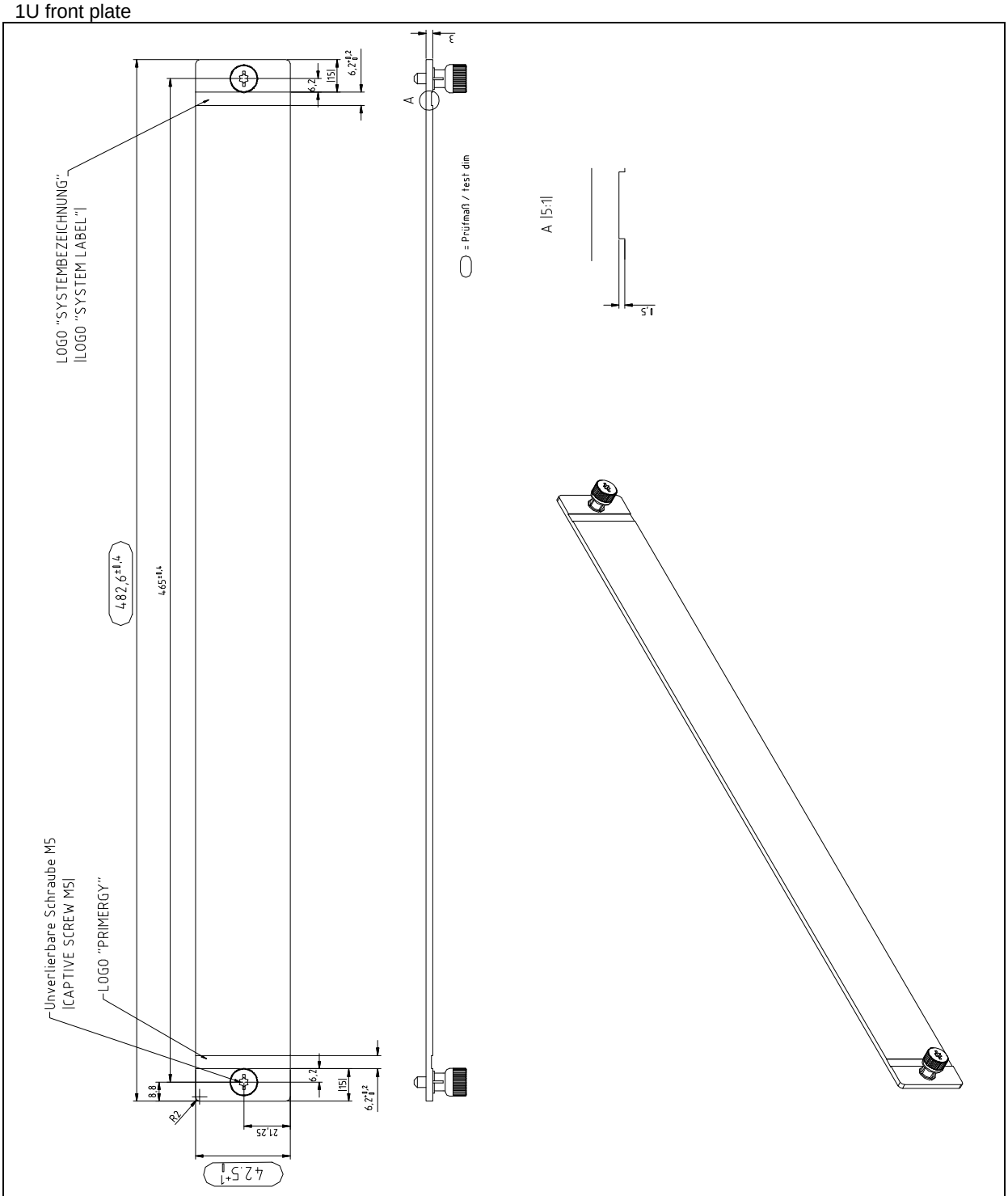
Mv --- Distance between the vertical mounting holes

Fw --- Front plate width = 482.6mm +-0.4
Fh --- Front plate height
HE/U --- Height unit = 44.45mm

The dimensions of the front plate width and the horizontal mounting holes are defined in accordance with DIN standard 41494.

Table HE/U	Fh	Mv
1 = **44.45**	**42.5 +1/-0**	**22.22 +/-0.1**
2 = **88.9**	**86.9 +0.4/-0**	**44.45 +/-0.2**
3 = **133.35**	**131.4 +0.4/-0**	**88.9 +/-0.2**
4 = **177.8**	**175.8 +0.4/-0**	**133.35 +/-0.2**
5 = **222.25**	**220.3 +0.4/-0**	**177.8 +/-0.2**
6 = **266.7**	**264.7 +0.4/-0**	**222.25 +/-0.2**

1U front plate



Generally, the following applies:
Front plate 1U server
w = 482.6mm ±0.4 h = 42.5mm +1/-0

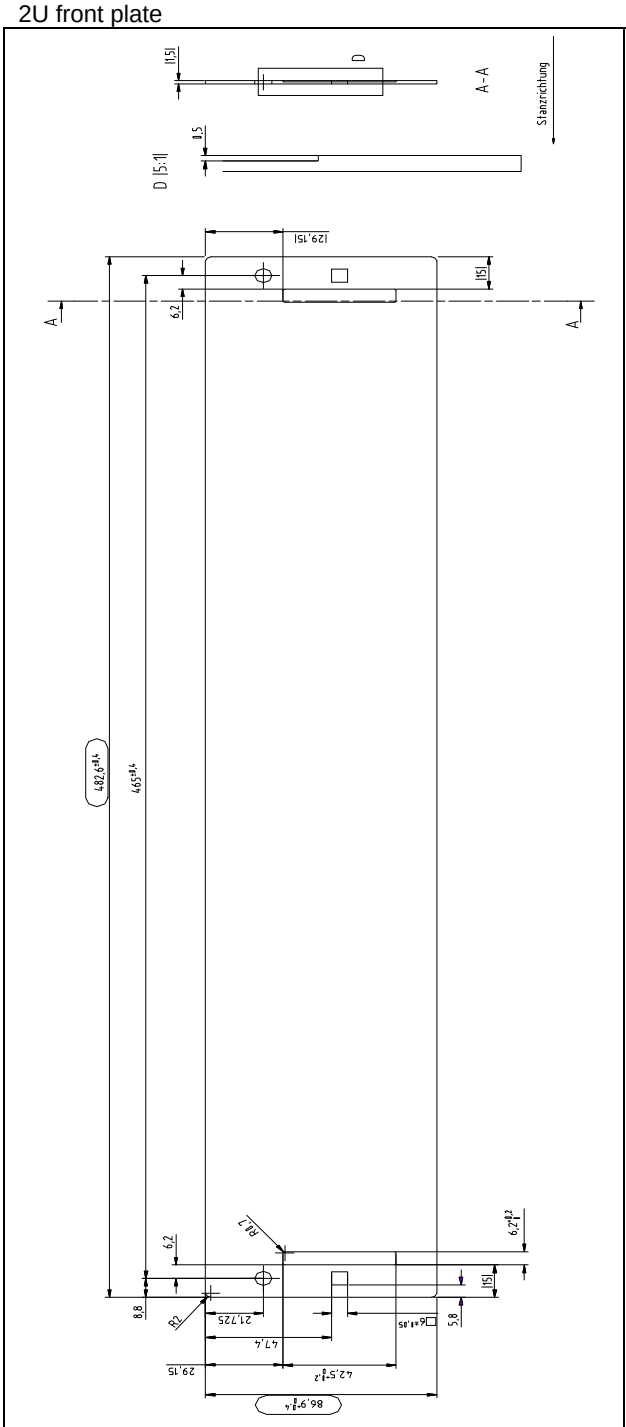
(Housing: **h = 40.5mm +3/-∞**)

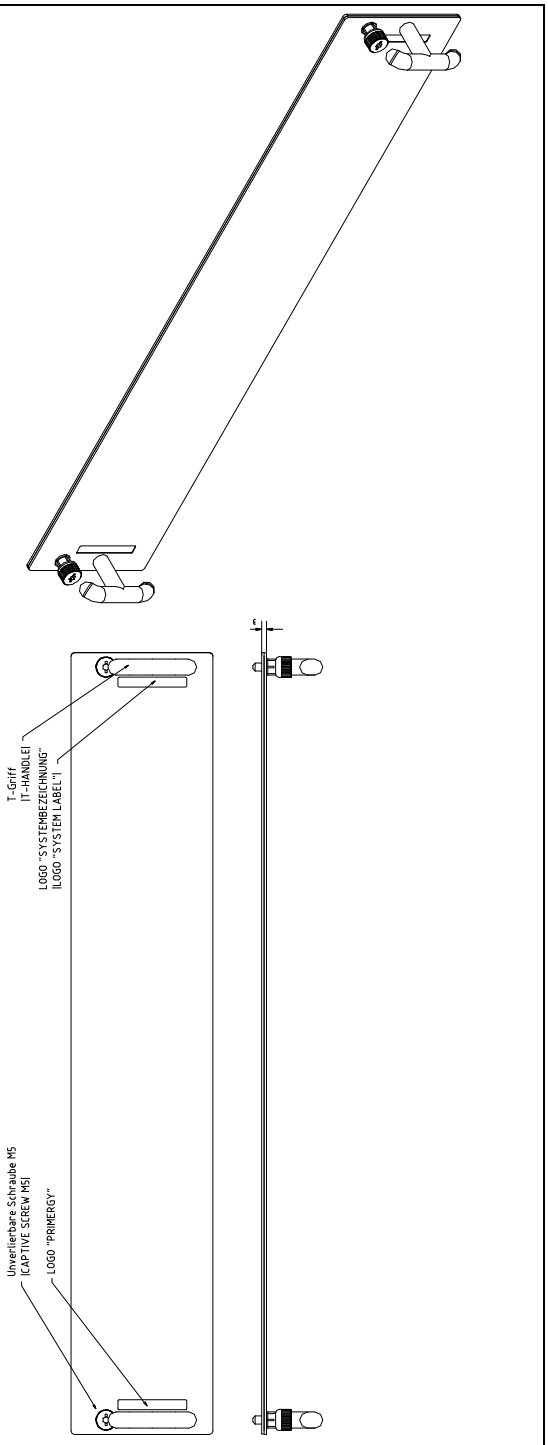
Bending radius: **R1**
Radii without dimensions: **R2**
Chamfers without dimensions: **2 x 45°**

Stamping direction free
Part degreased
Edges free of burr

⬭ = Test dimension
Tolerance of coordinate dimensions
+/-0.1

2U front plate





Generally, the following applies:
Front plate 2U server
b = 482.6mm ±0.4 h = 86.9mm +0.4/-0

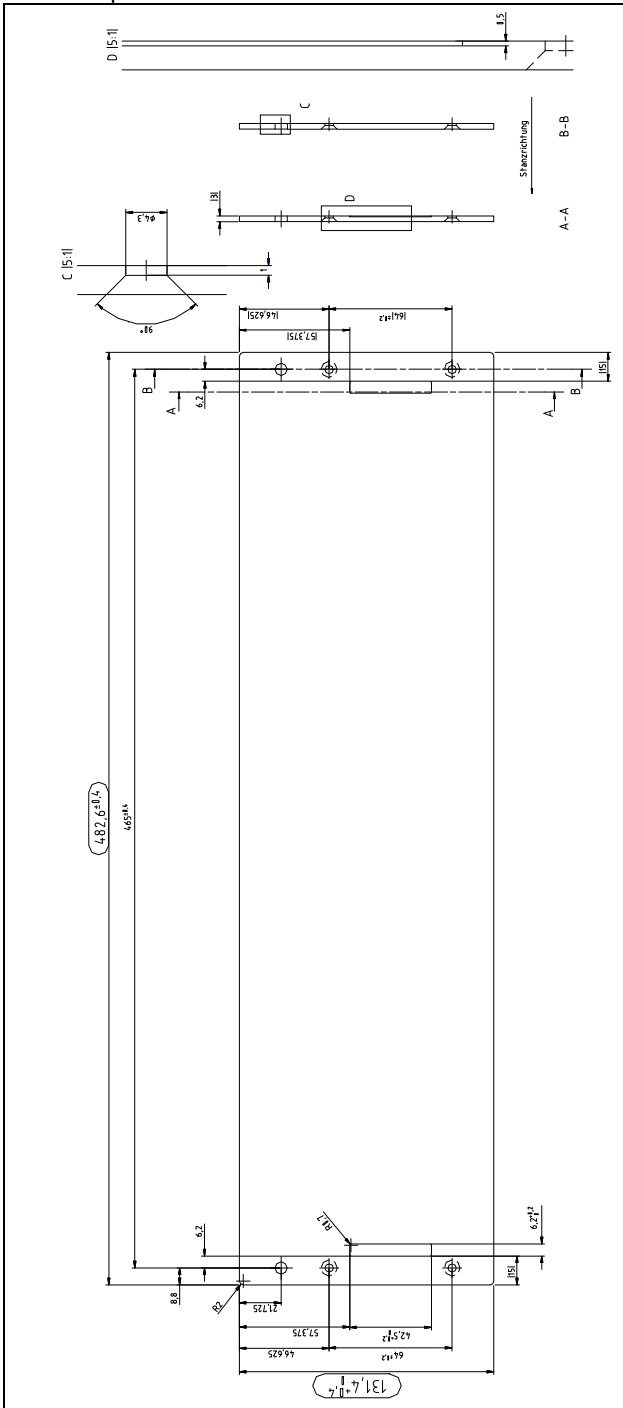
(Housing: **h = 84.9mm +1.5/-∞)**

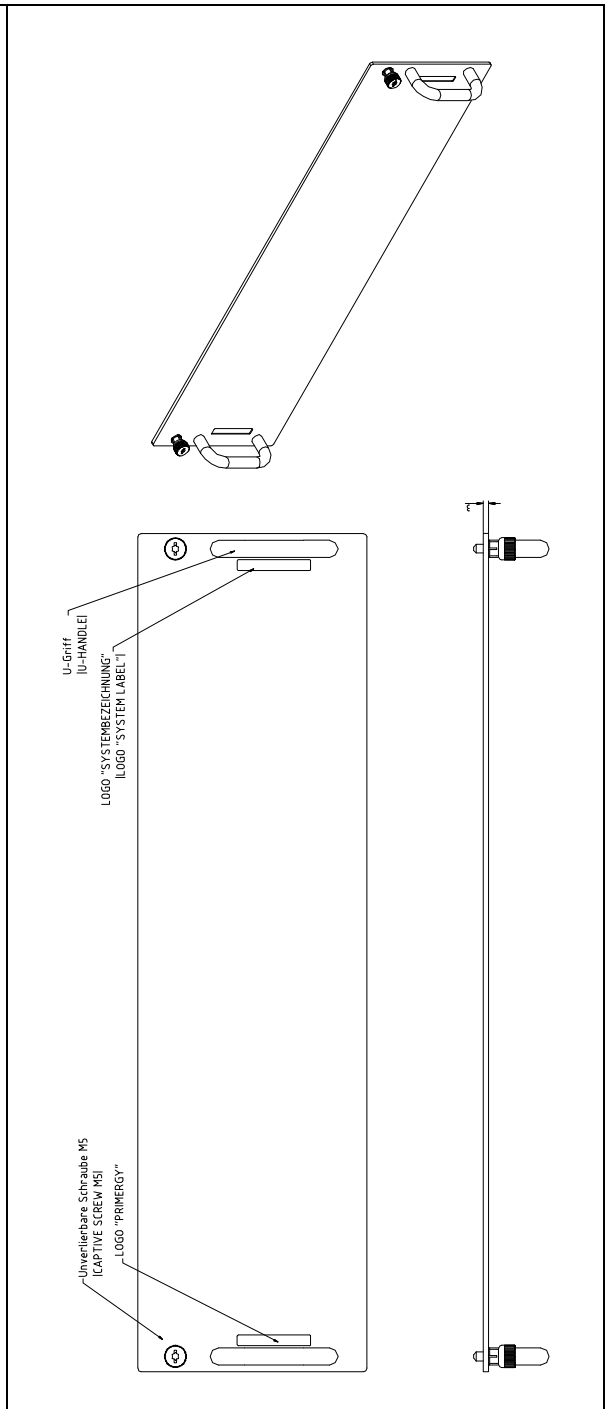
Bending radius: **R1**
Radii without dimensions: **R2**
Chamfers without dimensions: **2 x 45°**

Stamping direction free
Part degreased
Edges free of burr

⬭ = Test dimension
Tolerance of coordinate dimensions
+/-0.1

3U front plate





Generally, the following applies:

Front plate 3U server

b = 482.6mm ±0.4 h = 131.4mm +0.4/-0

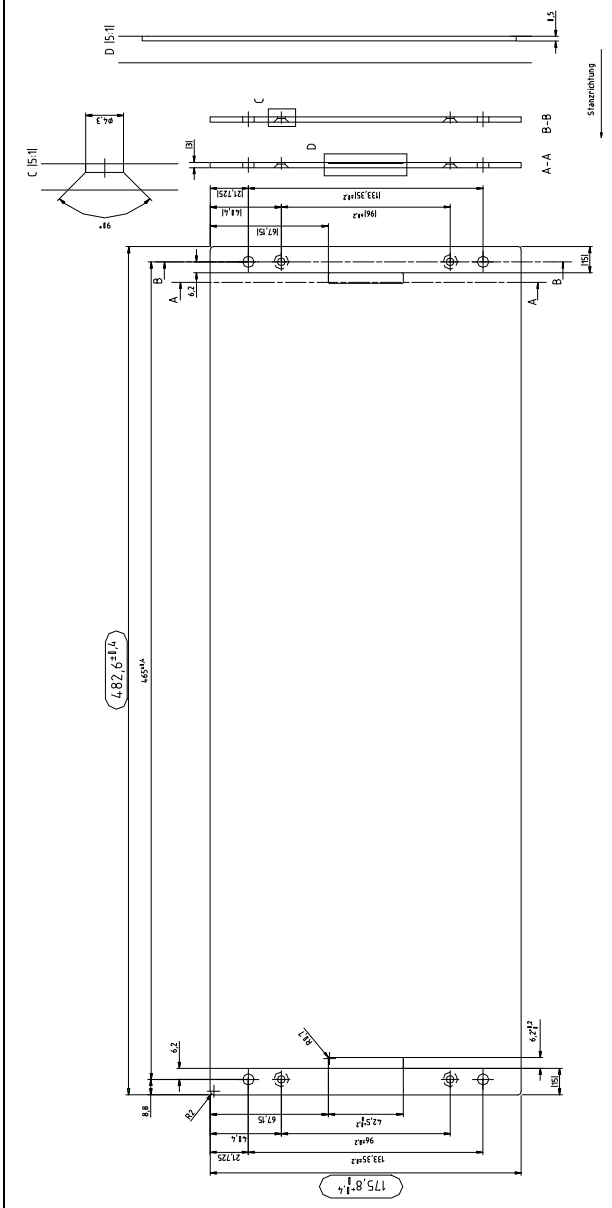
(Housing: **h = 129.4mm +0/-∞)**

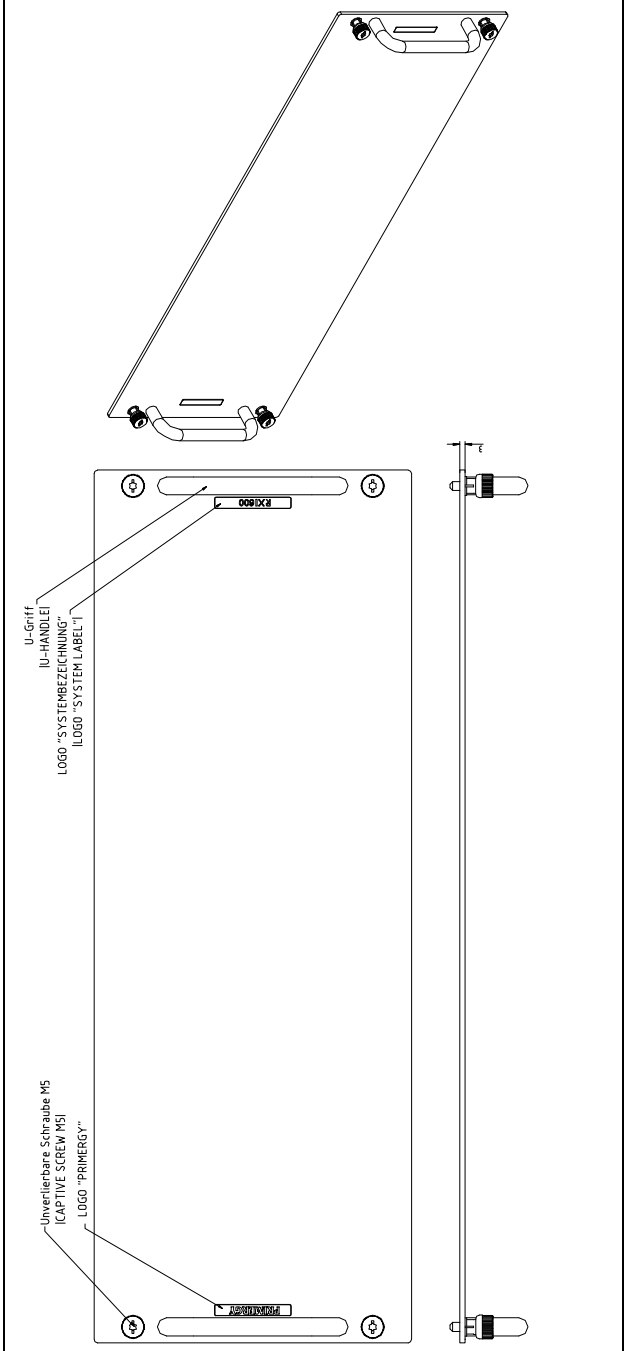
Bending radius: **R1**
Radii without dimensions: **R2**
Chamfers without dimensions: **2 x 45°**

Stamping direction freely selectable
Part degreased
Edges free of burr

= Test dimension
Tolerance of coordinate dimensions
+/-0.1

4U front plate





Generally, the following applies:
Front plate 4U server
w = 482.6mm ±0.4 h = 175.8mm +0.4/-0

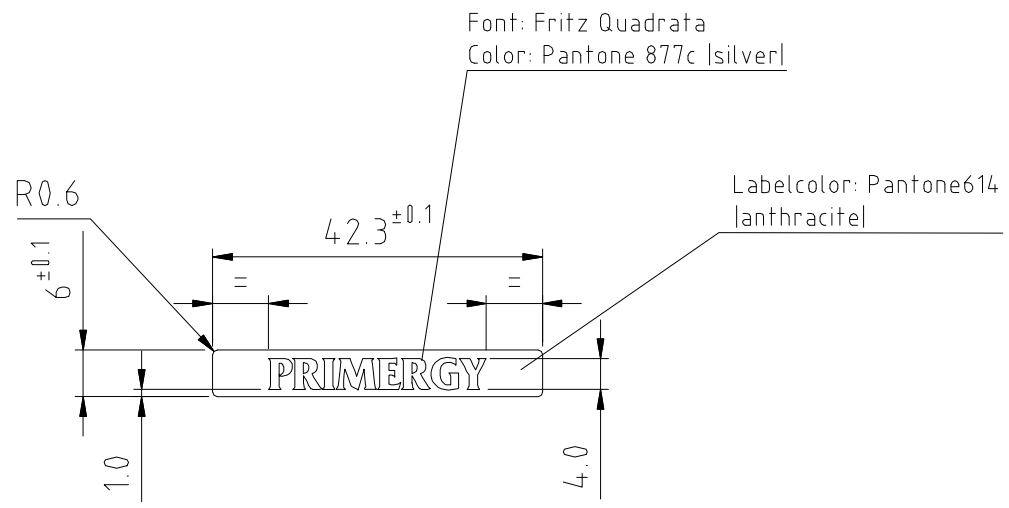
(Housing: **h = 173.8mm +0/-∞)**

Bending radius: **R1**
Radii without dimensions: **R2**
Chamfers without dimensions: **2 x 45°**

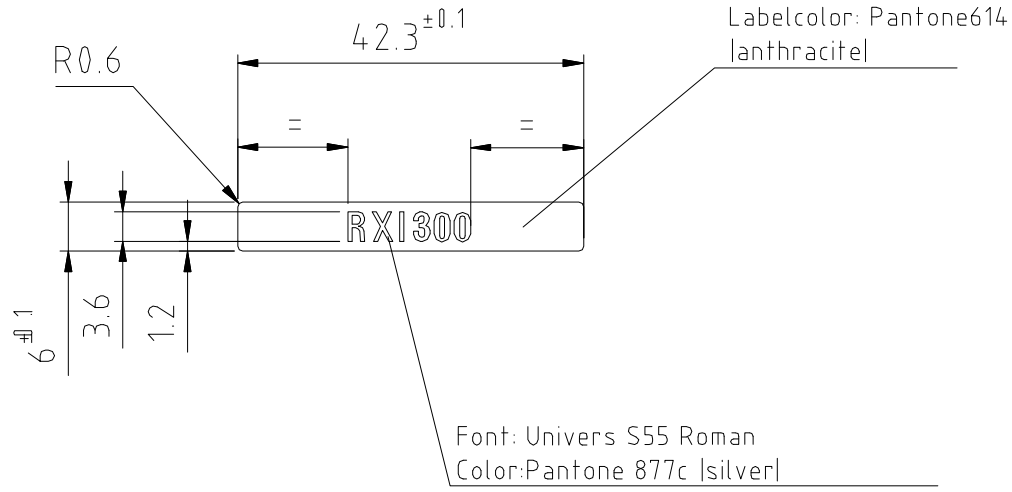
Stamping direction freely selectable
Part degreased
Edges free of burr

⬭ = Test dimension
Tolerance of coordinate dimensions
+/-0.1

Logos front plate



(1) Polyesterfoil Autotex V280-280my+
3M Scotch 9672-130my
Label Thickness: 0,4mm
Total Thickness: 0,6mm

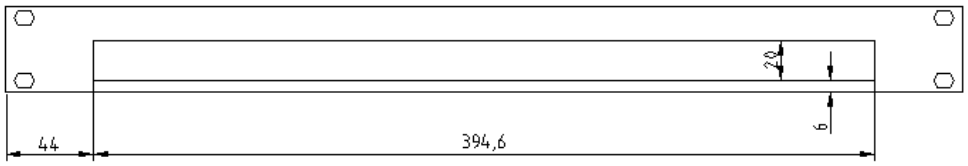


(1) Polyesterfoil Autotex V280-280my+
3M Scotch 9672-130my
Label Thickness: 0,4mm
Total Thickness: 0,6mm

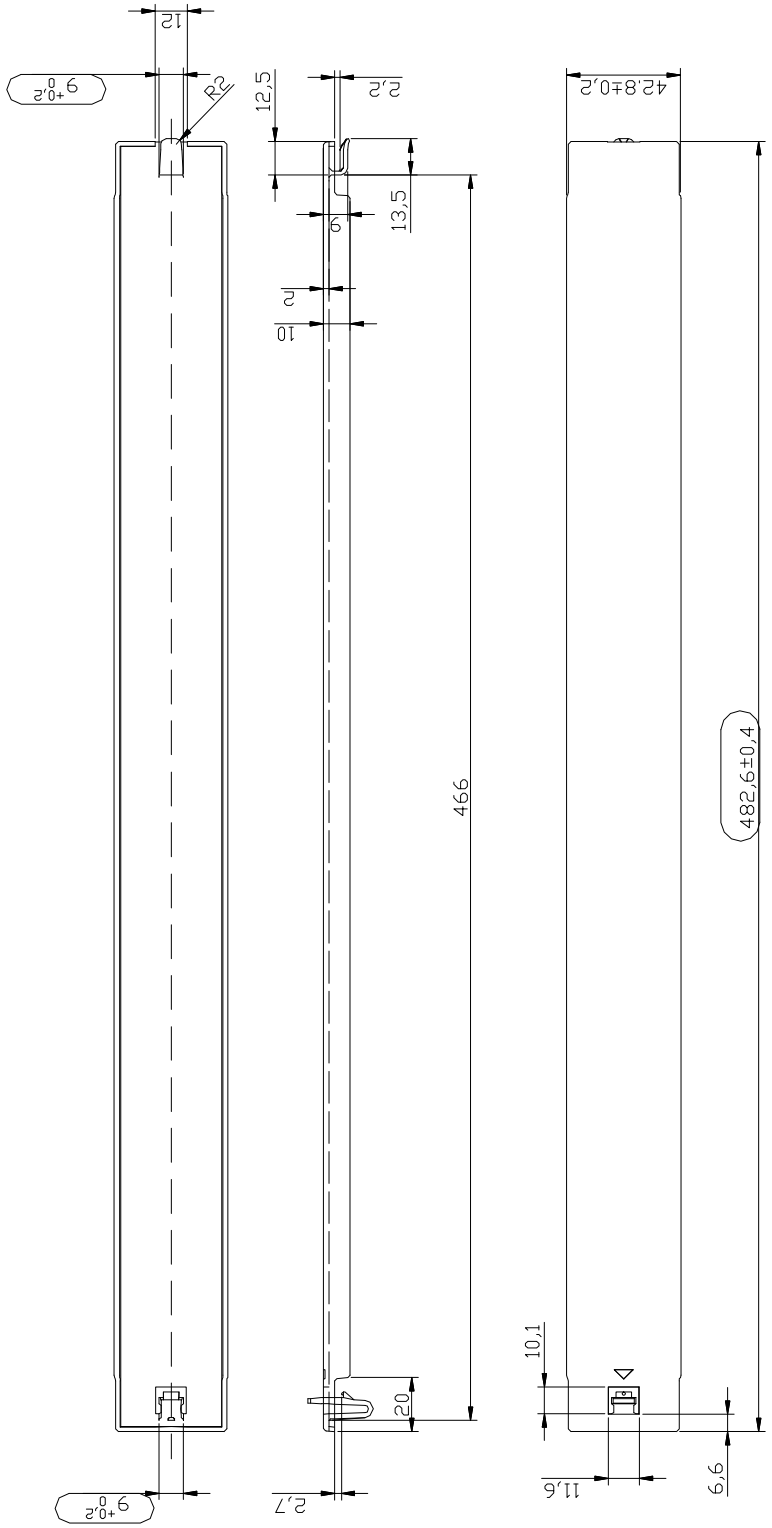
3.2 19-inch dummy panels / blind plates

Front plates are also available as so-called covers, dummy panels or blind plates for closing empty bays and slots in the rack. This is mandatory to ensure proper ventilation of the installed servers in the rack.

By default the following cover plates are available:

19“ Kabeldurchführung 1HE mit Bürsten
19“ Kabeldurchführung 1HE mit Bürsten 
19“ cable bushing 1U with strip **S26361-F2735-E25; S26361-F2735-L25**

Dummy panel 1U tool-less

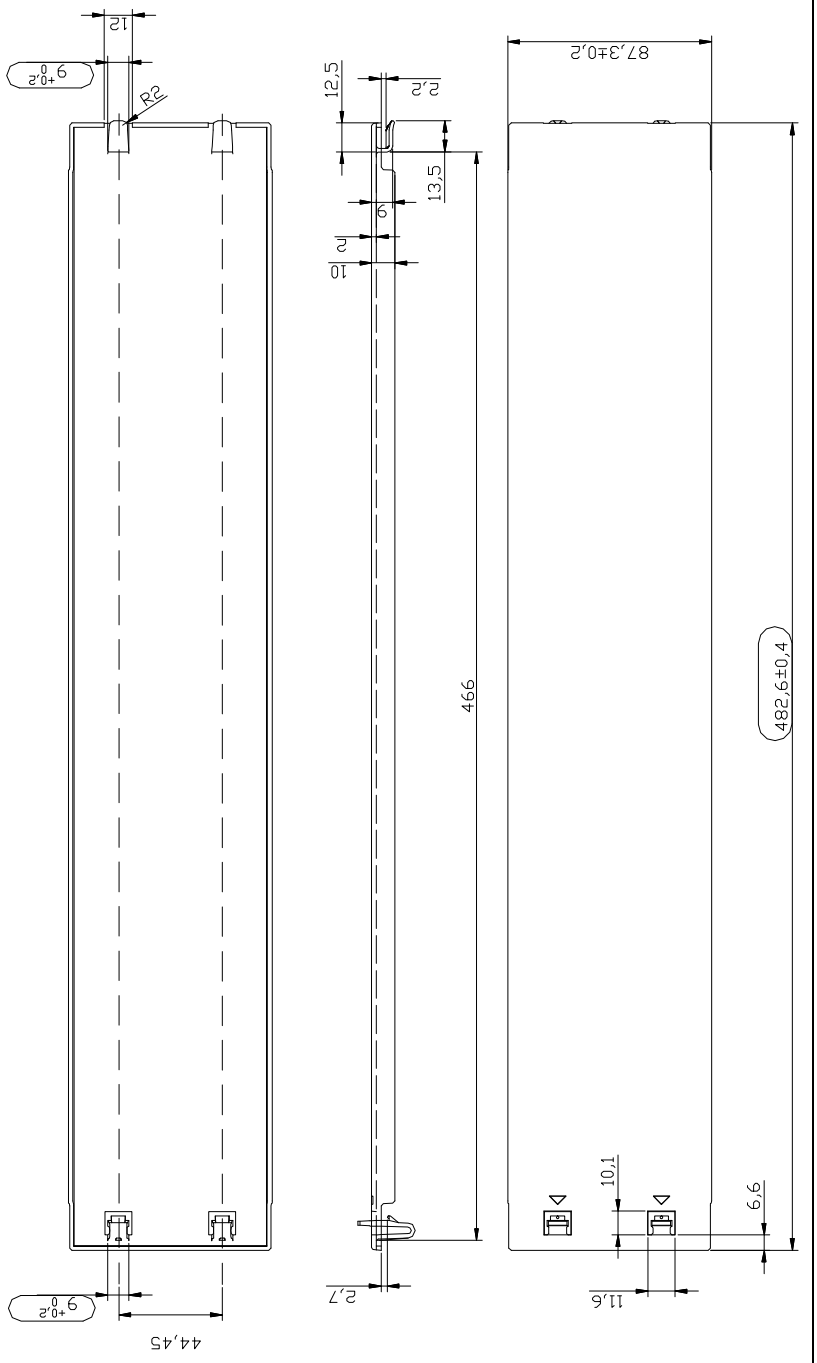


Dummy panel 1U tool-less

dummy panel 1U plastic, tool-less mounting
(Kunststoff: >PC+ABS< -FR(40) SN 614 UL 94 V0)

S26361-F2735-L130 A3C40088113

Dummy panel 2U tool-less



Dummy panel 2U tool-less

dummy panel 2U plastic, tool-less mounting
(Kunststoff: >PC+ABS< -FR(40) SN 614 UL 94 V0)

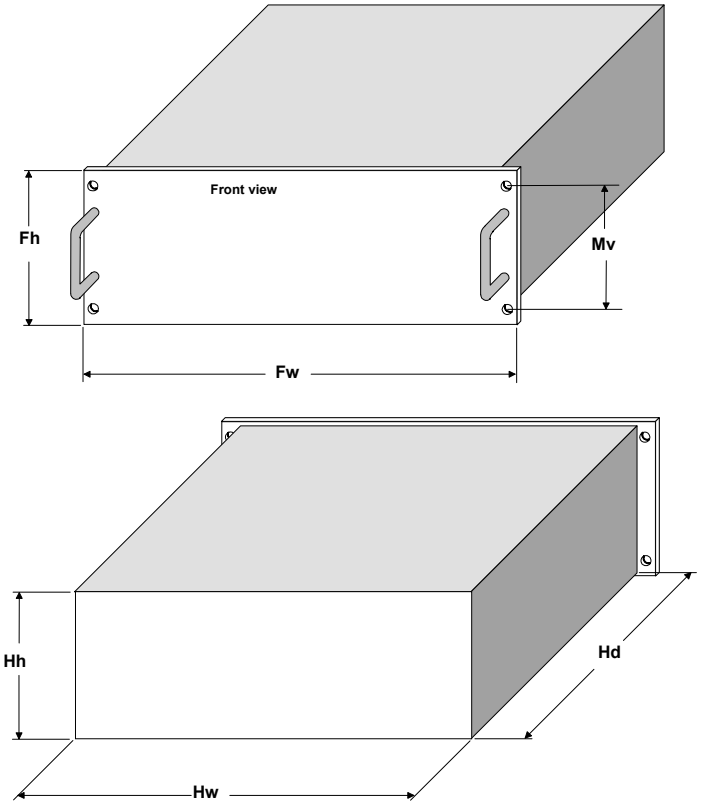
S26361-F2735-L131 A3C40088114

4 19-inch housing

The term 19-inch housing refers to all system installation components of this format.

4.1 19-inch housing dimensions

The form and the housing depth depend in each case on the corresponding carrier system and the rack (installation depth) into which the housing is installed. This chapter will not consider these factors but will only show the theoretical limits. For more information see the sections on rack types and carrier systems.



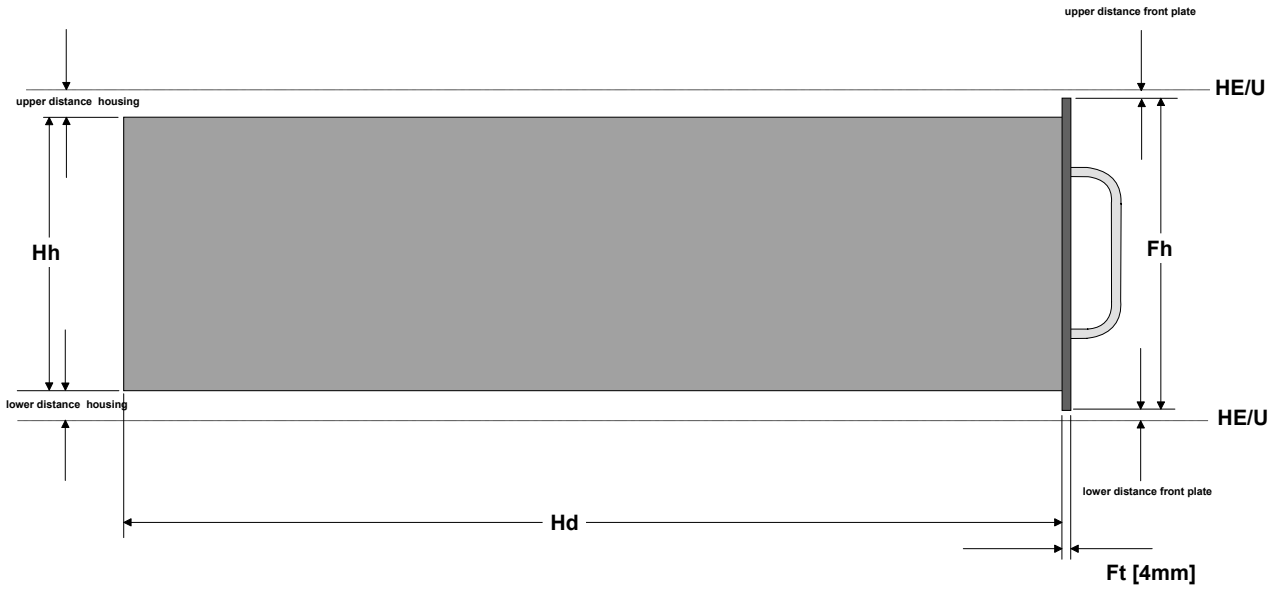
Hw --- **Housing width = 448mm**
Hh --- **Housing height**
Hd --- **Housing depth**
Mv --- **Distance between the vertical mounting holes**

Fw --- **Front plate width = 482.6mm +-0-.4**
Fh --- **Front plate height**

Table 2

U	Hh	Fh	Mv	Hd (PCR1000)	Hd (PCR1100)
1 = **44.45**	**40.5 +3/-∞**	**42.5 +1/-0**	**22.22 +/-0.1**	**782mm**	**792mm**
2 = **88.9**	**84.9 +1.5/-∞**	**86.9 +0.4/-0**	**44.45 +/-0.2**	**782mm**	**792mm**
3 = **133.35**	**129.4 +0/-∞**	**131.4 +0.4/-0**	**88.9 +/-0.2**	**782mm**	**792mm**
4 = **177.8**	**173.8 +0/-∞**	**175.8 +0.4/-0**	**133.35 +/-0.2**	**782mm**	**792mm**
5 = **222.25**	**218.3 +0/-∞**	**220.3 +0.4/-0**	**177.8 +/-0.2**	**782mm**	**792mm**
6 = **266.7**	**262.7 +0/-∞**	**264.7 +0.4/-0**	**222.25 +/-0.2**	**782mm**	**792mm**

Note: 1U 19-inch housings are subject to slightly different special rules concerning the distance between the housing top and bottom and the height unit.



HE / U unit
Fh front plate height
Ft front plate thickness
Hh housing height
Hd housing depth

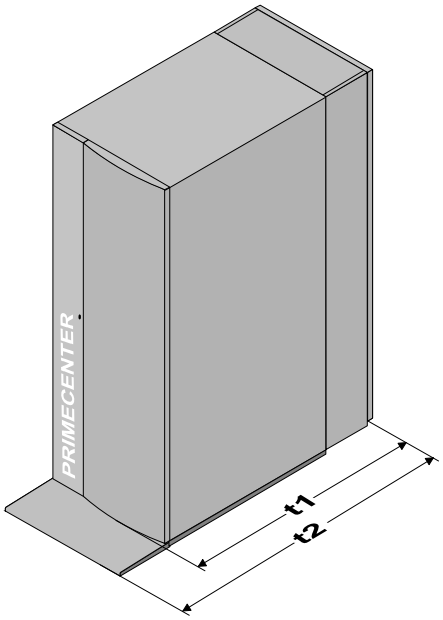
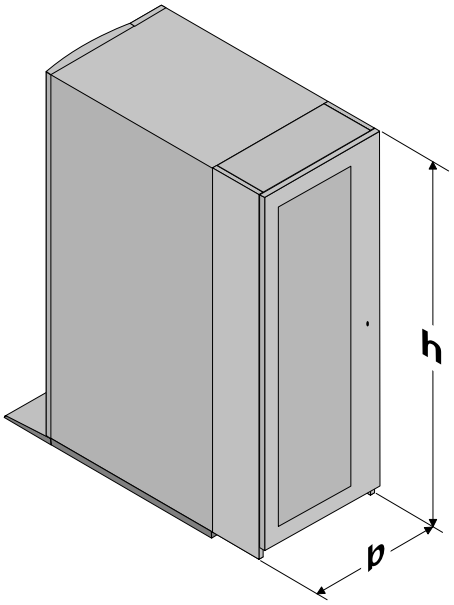
5 PRIMECENTER rack family

This chapter describes the different FSC rack types with their installation dimensions and requirements.

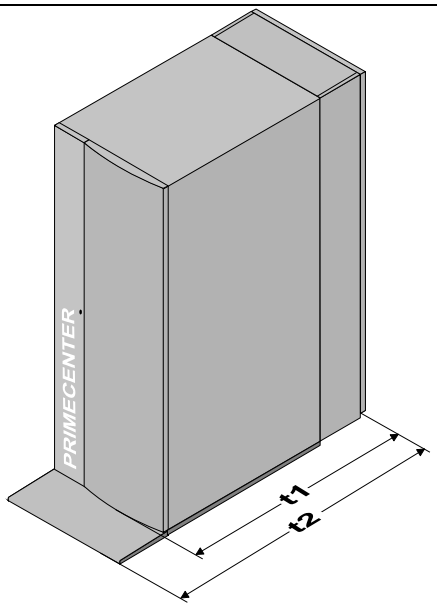
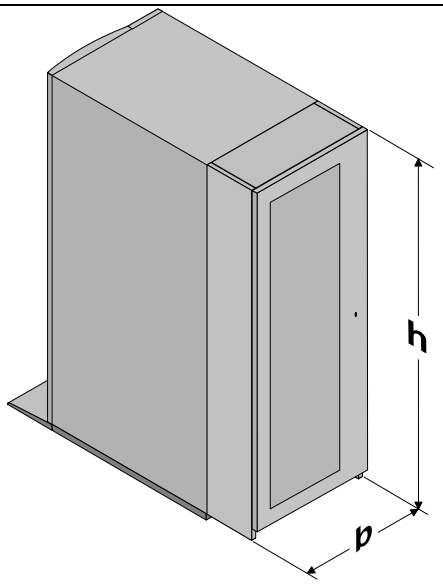
PRIMECENTER rack family

*The figure does not show the 48 U rack ((Should there be a corresponding asterisk in the text or is this just a note?))

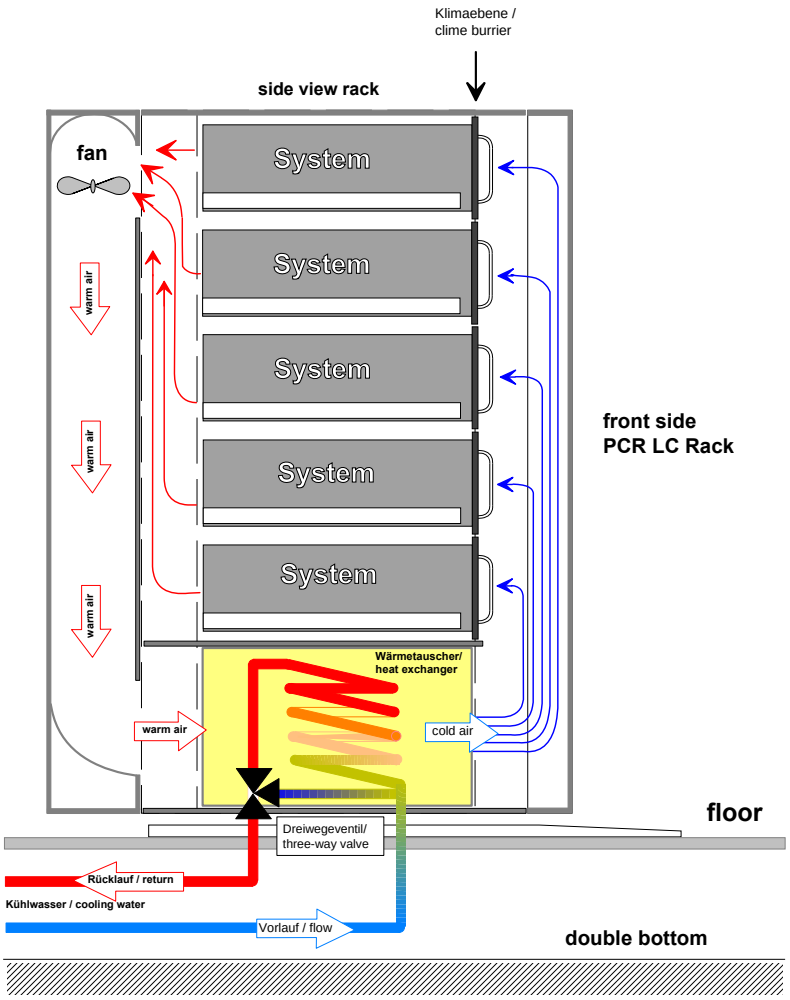
5.1 PRIMECENTER Rack (PCR)

	
PRIMECENTER II Rack 12U / 1x2U vertical **S26361-K826-V101 / D:GPRAC-BG50**	**t1 = 1000mm b = 700mm h = 670mm** **t2 = 1200mm weight = 82kg** Transport dimensions: **t = 1180mm b = 775mm h = 790mm**
PRIMECENTER II Rack 24U / 2x2U vertical **S26361-K826-V102 / D:GPRAC-BG51**	**t1 = 1000mm b = 700mm h = 1220mm** **t2 = 1200mm weight = 110kg** Transport dimensions: **t = 1180mm b = 775mm h = 1345mm**
S26361-K826-V212	**t1 = 1100mm b = 700mm h = 1220mm** **t2 = 1315mm weight = 112kg** Transport dimensions: **t = 1280mm b = 775mm h = 1345mm**
PRIMECENTER II Rack 38U / 3x2U vertical **S26361-K826-V103 / D:GPRAC-BG52**	**t1 = 1000mm b = 700mm h = 1825mm** **t2 = 1200mm weight = 150kg** Transport dimensions: **t = 1180mm b = 775mm h = 1935mm**
S26361-K826-V213	**t1 = 1100mm b = 700mm h = 1825mm** **t2 = 1315mm weight = 152kg** Transport dimensions: **t = 1280mm b = 775mm h = 1935mm**
PRIMECENTER II Rack 46U / 3x2U vertical **S26361-K826-V104 / D:GPRAC-BG53**	**t1 = 1000mm b = 700mm h = 2220mm** **t2 = 1200mm weight = 168kg** Transport dimensions: **t = 1180mm b = 775mm h = 2335mm**
S26361-K826-V214	**t1 = 1100mm b = 700mm h = 2220mm** **t2 = 1315mm weight = 171kg** Transport dimensions: **t = 1280mm b = 775mm h = 2335mm**

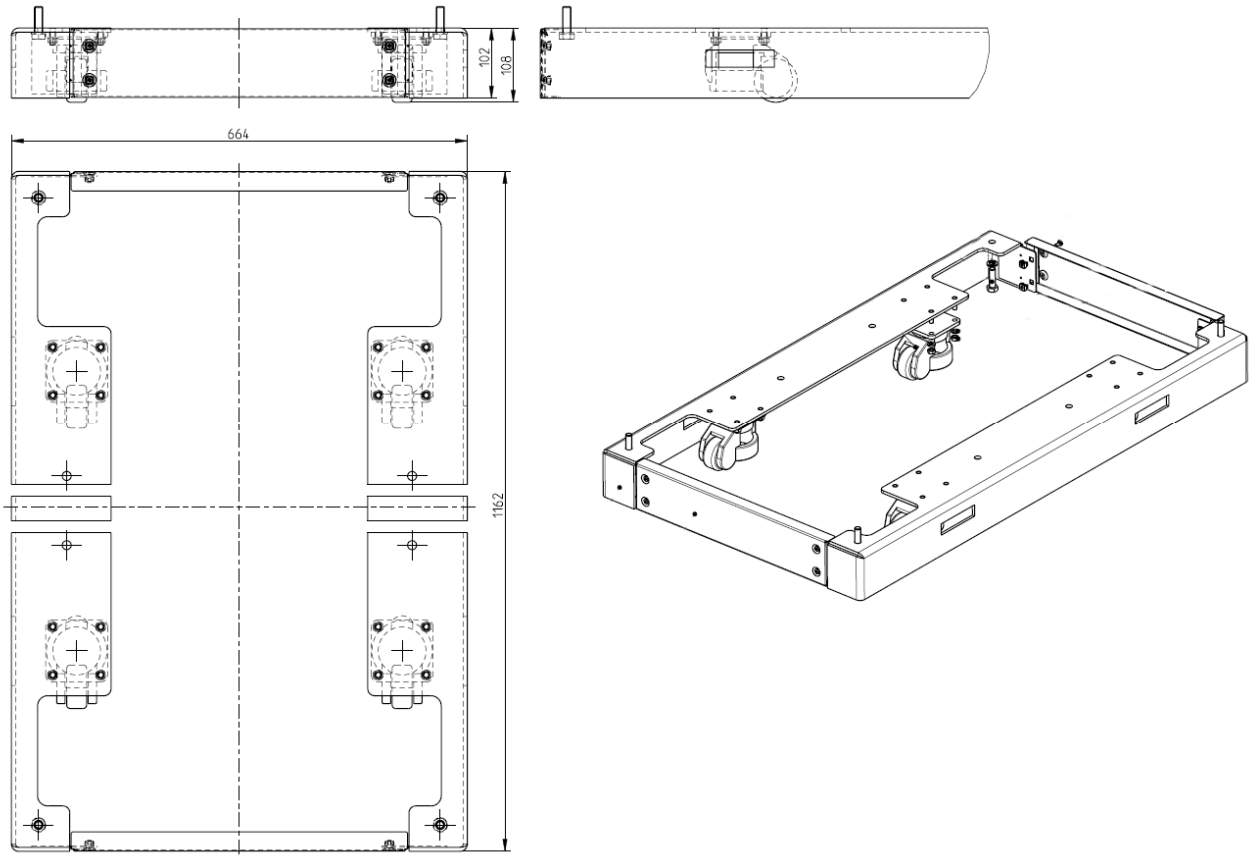
5.2 PRIMECENTER LC-Rack 38 and 46U (liquid cooling)

	
PRIMECENTER LC-Rack 38U / 31U nutzbar, 2x2U vertikal Three-way valve **S26361-K1022-V130**	**t1 = 1200mm b = 700mm h = 1800mm** **t2 = 1400mm weight = 88kg** Transport dimensions: **t = 1300mm b = 800mm h = 1900mm**
PRIMECENTER LC-Rack 38U / 31U nutzbar, 2x2U vertikal Three-way valve and socket with roles **S26361-K1022-V135**	**t1 = 1200mm b = 700mm h = 1800mm** **t2 = 1400mm weight = 98kg** Transport dimensions: **t = 1300mm b = 800mm h = 2008mm**
PRIMECENTER LC-Rack 46U / 40U nutzbar, 2x2U vertikal Three-way valve **S26361-K1022-V230**	**t1 = 1200mm b = 700mm h = 2200mm** **t2 = 1400mm weight = 92kg** Transport dimensions: **t = 1300mm b = 800mm h = 2300mm**
PRIMECENTER LC-Rack 46U / 40U nutzbar, 2x2U vertikal Three-way valve and socket with roles **S26361-K1022-V235**	**t1 = 1200mm b = 700mm h = 2200mm** **t2 = 1400mm weight = 102kg** Transport dimensions: **t = 1300mm b = 800mm h = 2408mm**

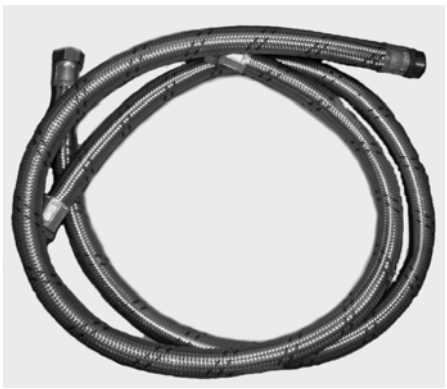
5.2.1 Function



5.2.2 Zubehör



Drawing and dimensions PCR LC Racks
In product number: S26361-K1022-V135
S26361-K1022-V235



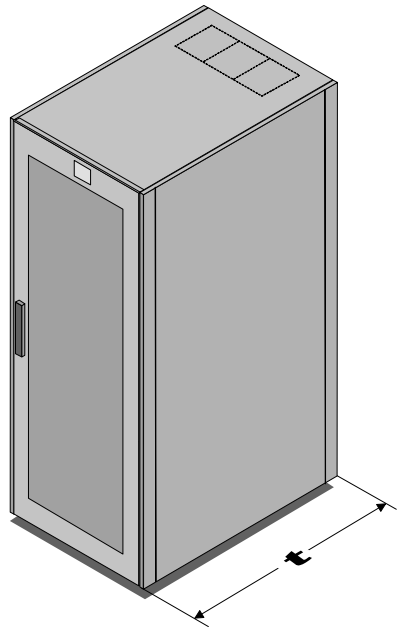
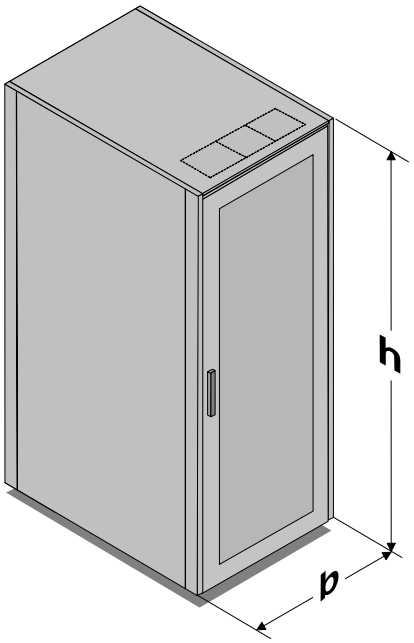
connecting kit:

- 1 x Kugelhahn m. Entl. DN 25
- 1 x Entleerkugelhahn 1/4"
- 1 x Hydrocontrol DN25 m Entl.Mnip
- 2 x Flex-Schlauch DN 25,L=1,5m
- 4 x Nippel MS (flachdichtend) 1"

connecting kit 1,5 m LC Racks optional
product number: S26361-F2735- L602
delivery unit: A3C40097585

5.3 PRIMECENTER SME Rack

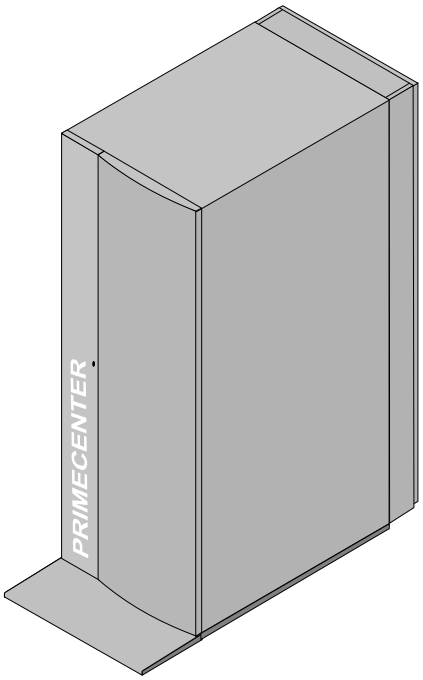
(SME / small medium enterprise)

SME rack	SME rack
	
PRIMECENTER SME Rack 24U **S26361-F3327-L24**	**t = 1000mm b = 700mm h = 1220mm** **weight = 35kg** Transport dimensions: **t = 1270mm b = 775mm h = 1380mm**
PRIMECENTER SME Rack 42U **S26361-F3327-L42**	**t = 1000mm b = 700mm h = 1950mm** **weight = 70kg** Transport dimensions: **t = 1270mm b = 775mm h = 2000mm**

5.4 Remodeling kit for PRIMECENTER II rack (1100mm)

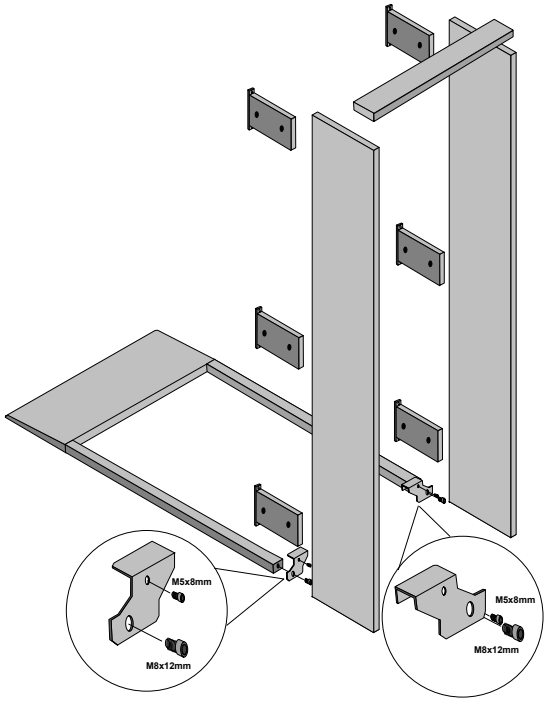
Instruction manual
Remodeling kit for PRIMECENTER II rack from 1000 to 1100mm depth.

PCR II Rack 1000mm



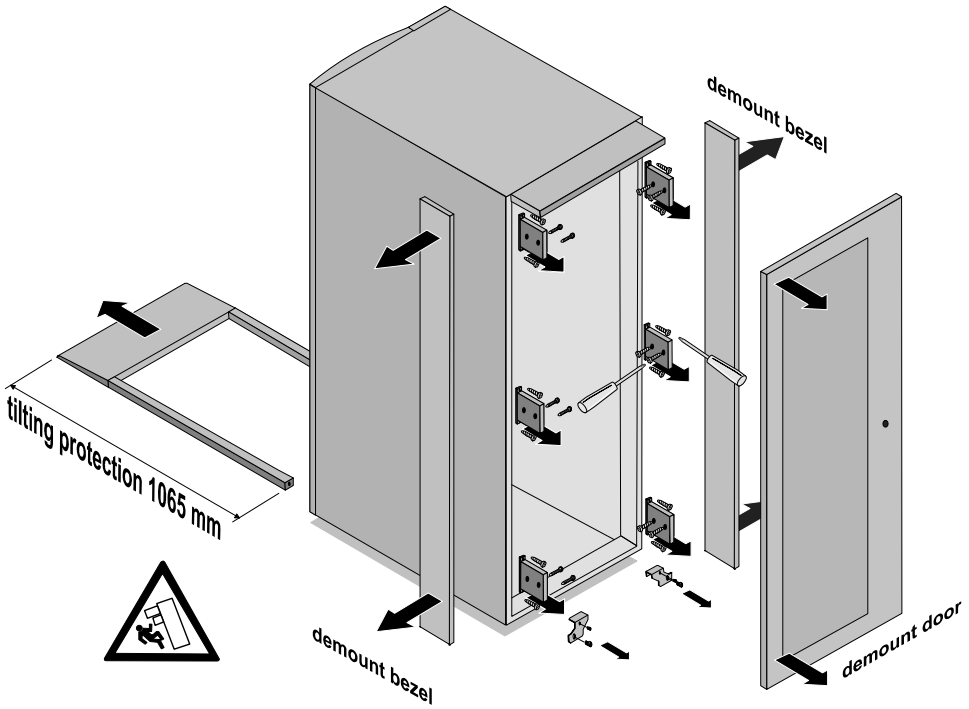
Picture 1

Remodeling kit



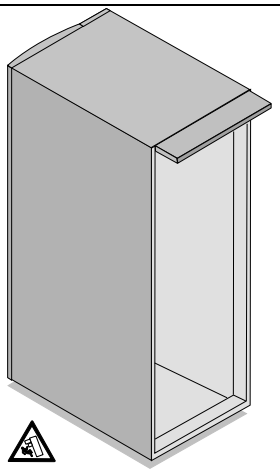
Picture 2

Remodeling

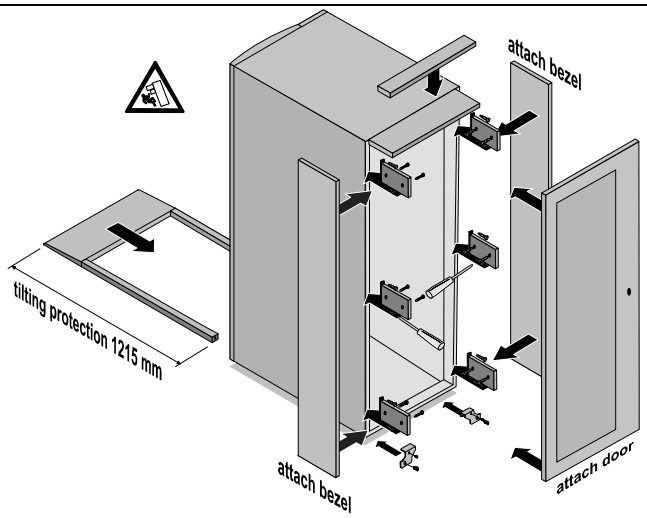


Picture 3

Remodeling	Remodeling

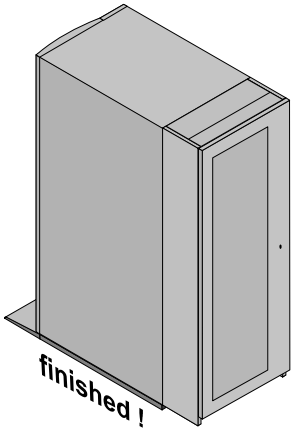


Picture 4



Picture 5

Remodeling



Picture 6

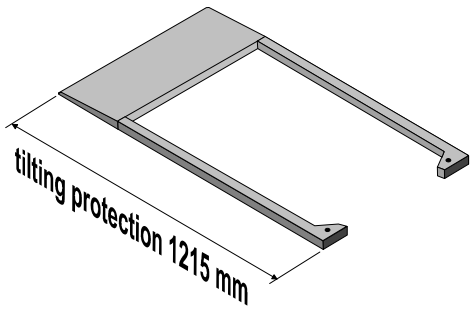
product number:

PCR II 24U S26361-F2735-L212

PCR II 38U S26361-F2735-L213

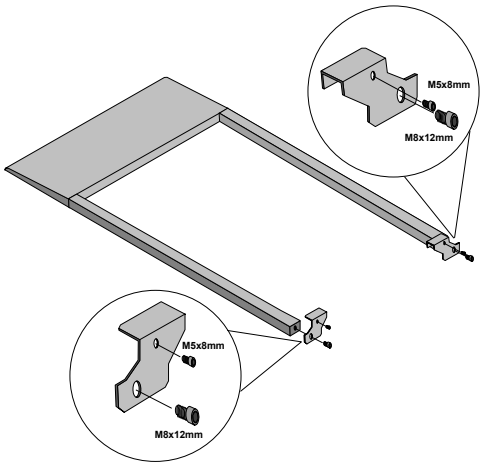
PCR II 46U S26361-F2735-L214

5.5 Enhanced tilt protection



OLD

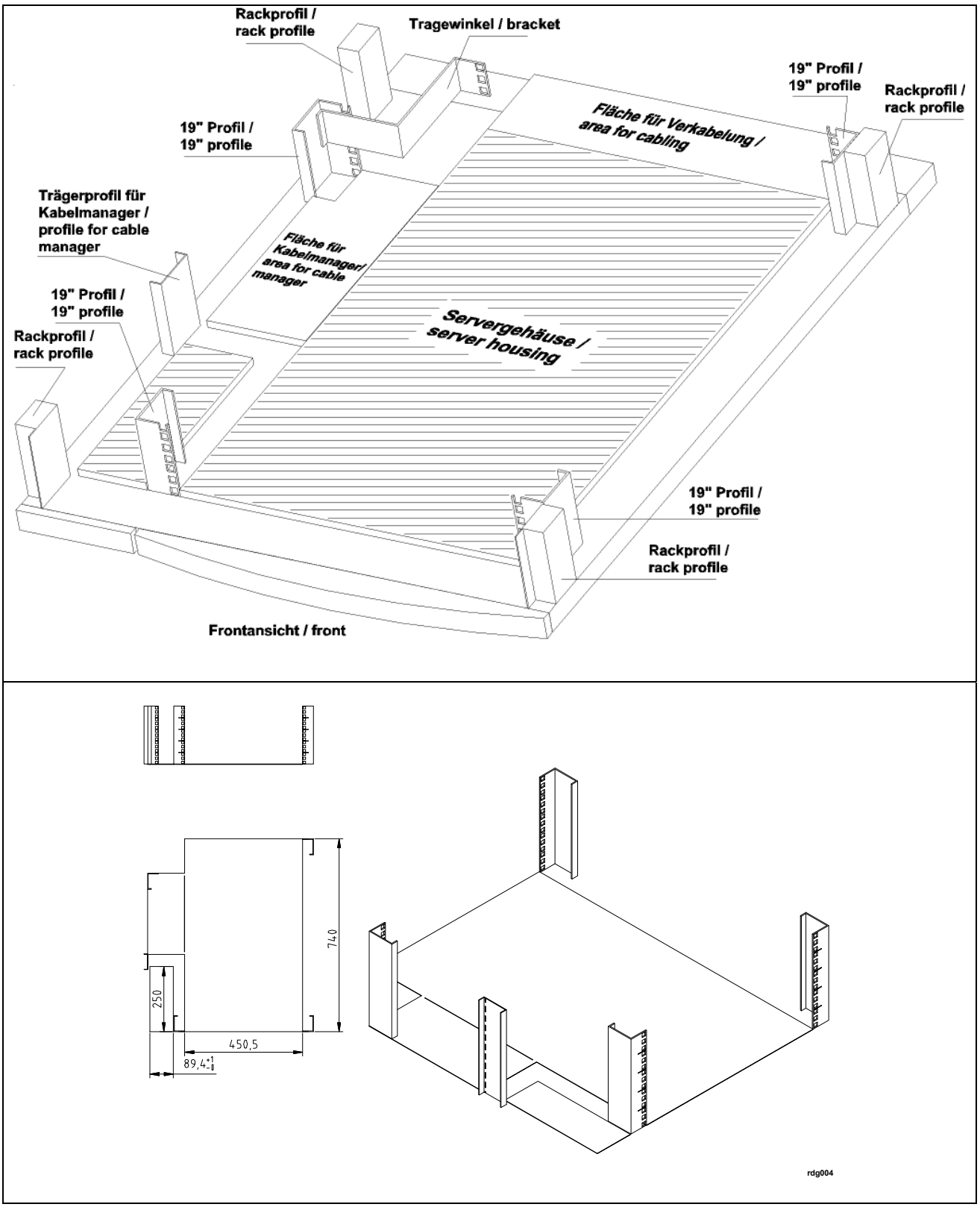
Enhanced tilt protection
S26361-F2735-L210 A3C40091899



NEW

Dimensions :
T = 1214,5mm b = 696mm h = 22,5mm

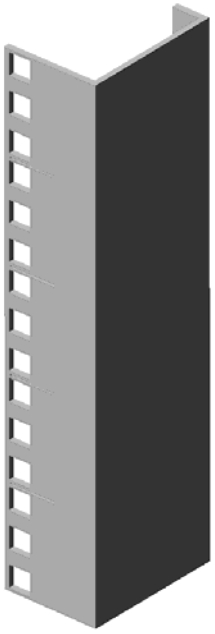
5.6 Basic design of FSC racks

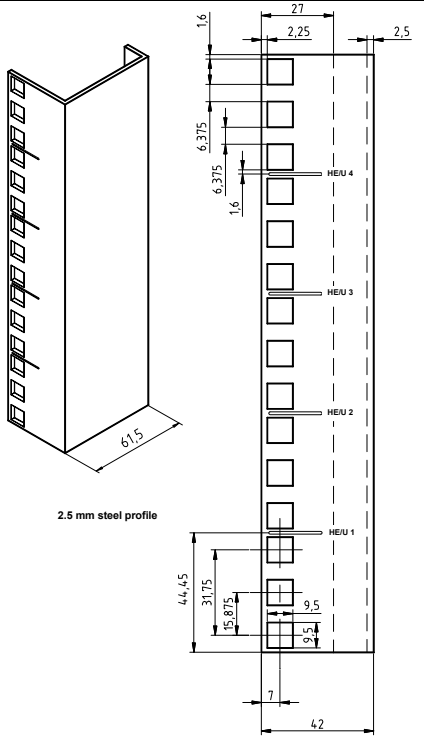


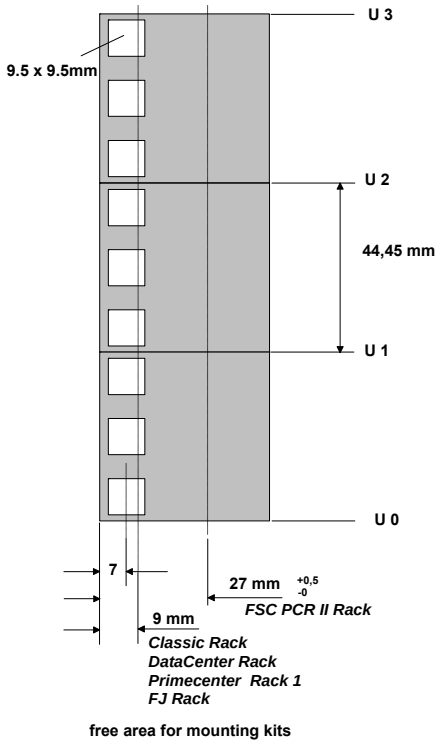
Carrier profiles: dimensioned sketch and structure

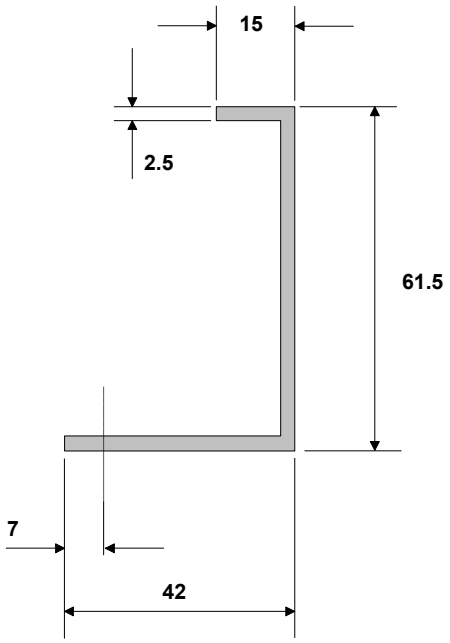
5.6.1 Vertical rack profiles

FSC PCRII	



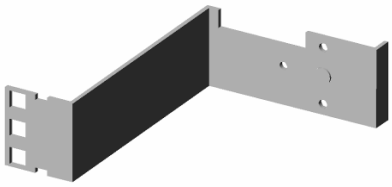


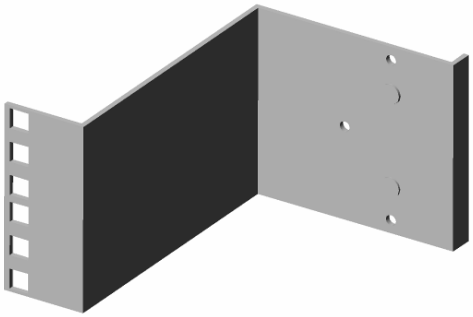
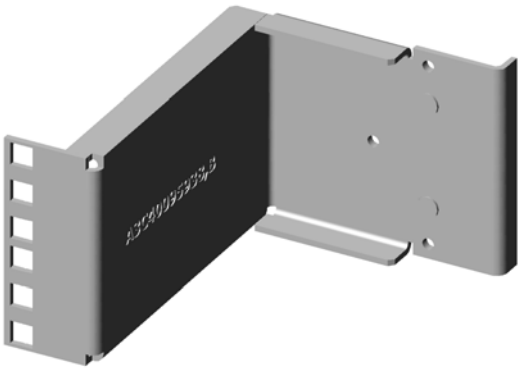


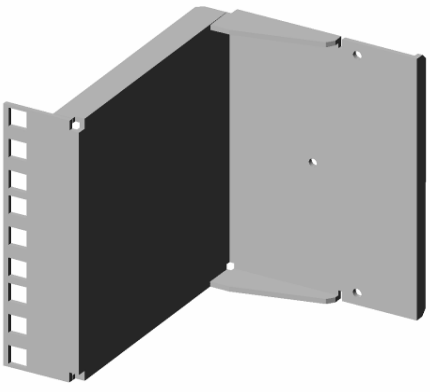
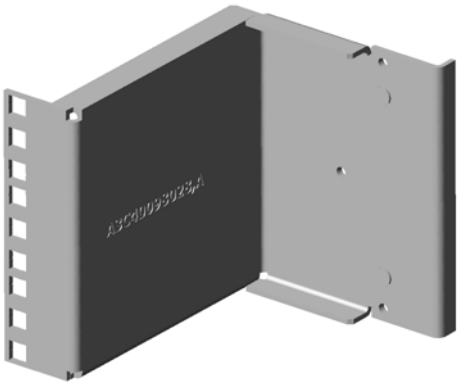


vertical extrusion with mounting holes 9.5x9.5mm (EIA-310-D Standard)	**FSC PRIMECENTER Rack II 19" (PCR II)**

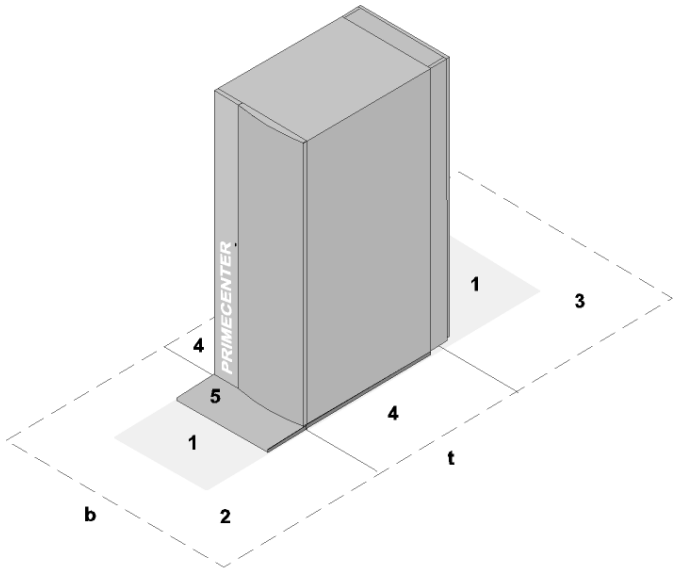
5.6.2 Support brackets

	NEW Q2 2008
Support bracket 1U (max. 15kg) **D:GPRAC-ZB5211; S26361-F2735-E10 / L10**	**enhanced support bracket 1U (max. 15kg)** **D:GPRAC-ZB5211; S26361-F2735-E10 / L10**

	NEW Q2 2008 
Support bracket 2U (max. 35kg) **D:GPRAC-ZB5212; S26361-F2735-E15 / L15**	**enhanced support bracket 2U (max. 35kg)** **D:GPRAC-ZB5212; S26361-F2735-E15 / L15**

	**New design**  A3C40098028
Support bracket 3U (max. 50kg) **D:GPRAC-ZB5215; S26361-F2735-E31 / L31**	**Support bracket 3U (max. 50kg)** **D:GPRAC-ZB5215; S26361-F2735-E31 / L31**

5.6.3 Space requirements



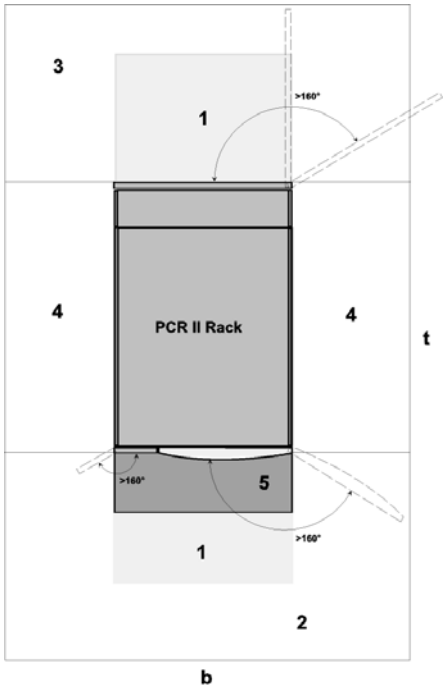
1 - Operational Clearance Area front- and rear side 700 x 700mm

2 - Service Area front side 1500mm (b) x 1200mm (t)
area required to install and remove systems to / from Rack

3 - Service Area rear side 1500mm (b) x 1000mm (t)
area required to install the cabling and power line

4 - Service Area of both side 400mm (b) x 1000mm (1100mm) (t)

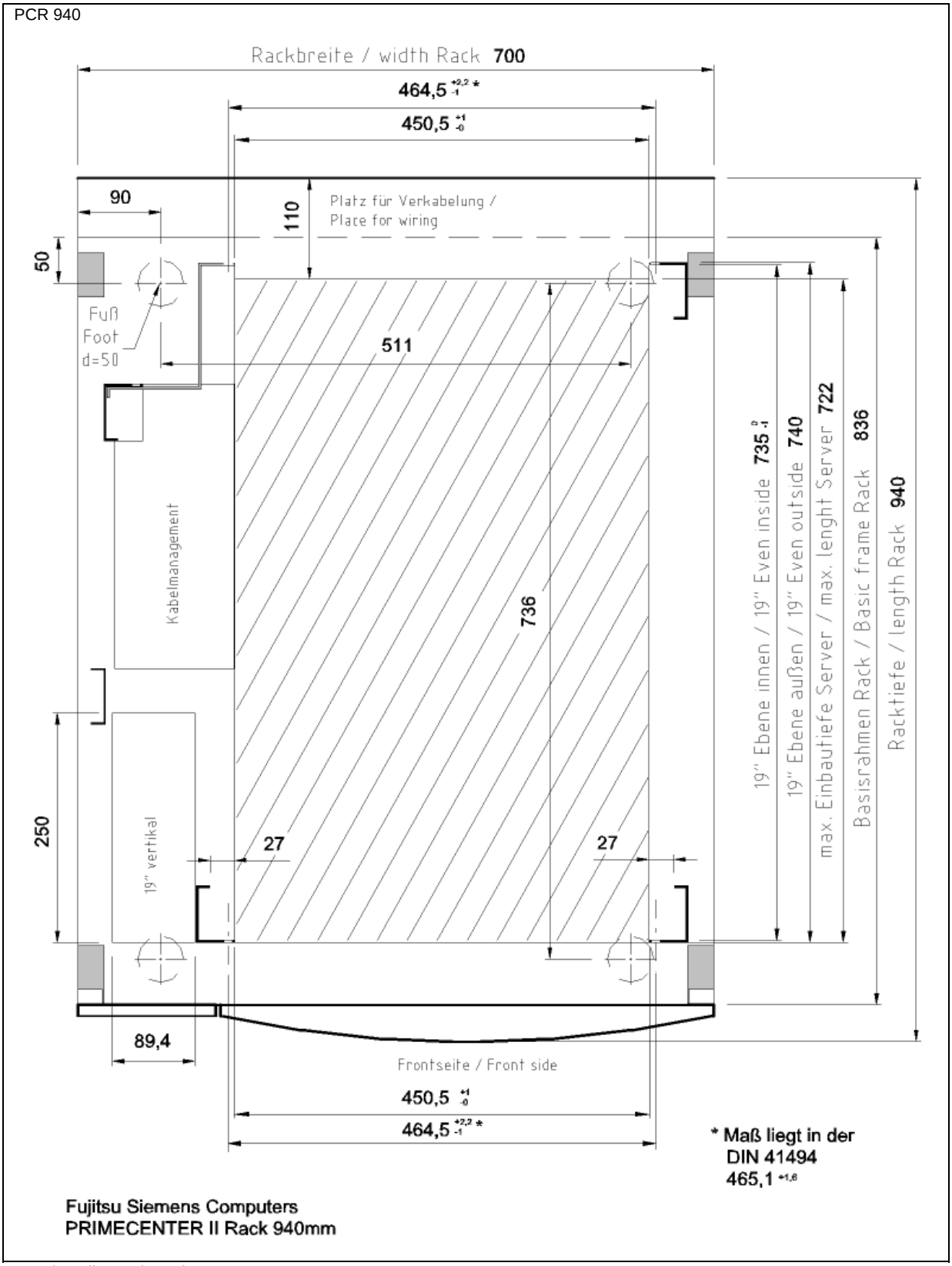
5 - Kippschutz / tilting protection
(240x700mm / 390x700mm



5.7 Layout

5.7.1 PCR II 940mm

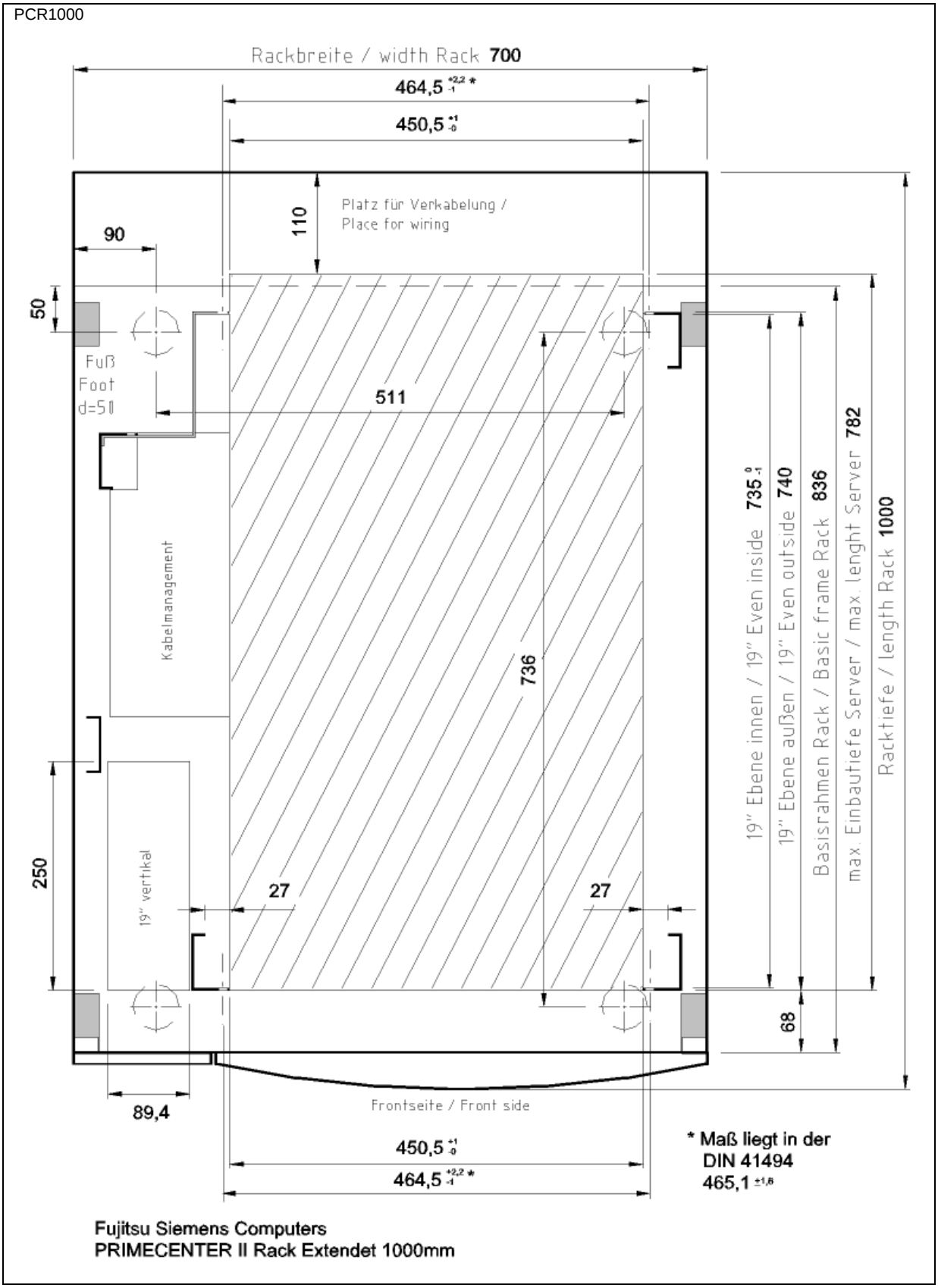
PCR 940



Version discontinued 2005

5.7.2 PCR II 1000mm

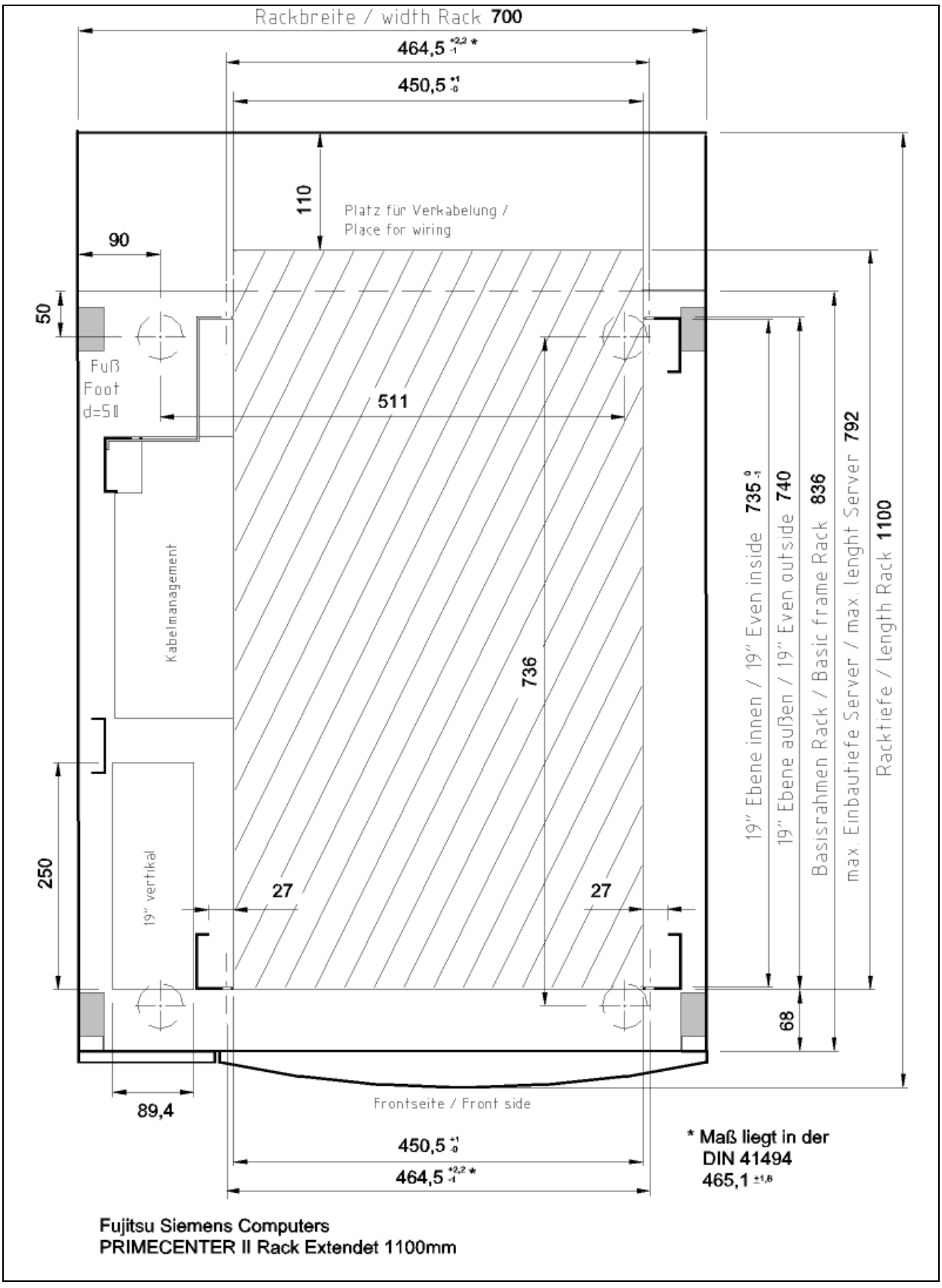
PCR1000



Fujitsu Siemens Computers
PRIMECENTER II Rack Extendet 1000mm

5.7.3 PCR II 1100mm

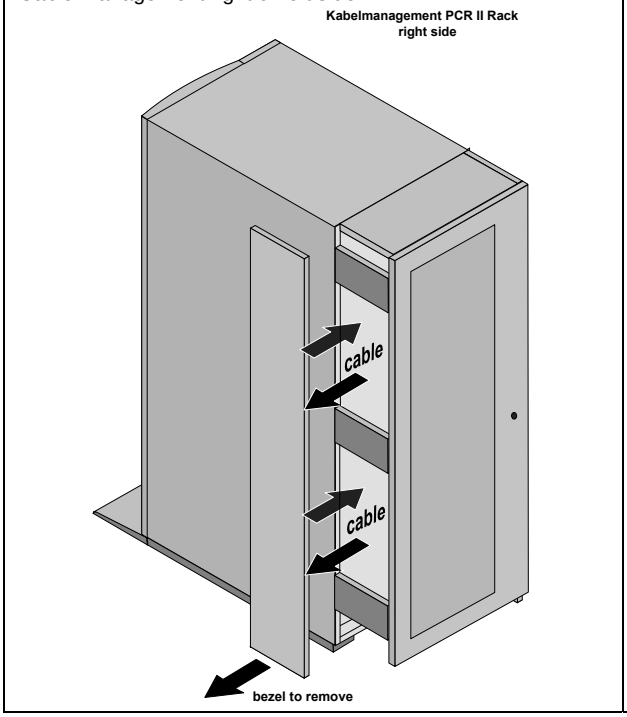
PCR1100


Rackbreite / width Rack 700
464,5 +2,2 -1 *
450,5 +1 -0
110
Platz für Verkabelung /
Place for wiring
90
50
Fuß
Foot
d=51
511
Kabelmanagement
736
250
19" vertikal
27
27
19" Ebene innen / 19" Even inside 735 0 -1
19" Ebene außen / 19" Even outside 740
Basisrahmen Rack / Basic frame Rack 836
max. Einbautiefe Server / max. lenght Server 792
Racktiefe / length Rack 1100
68
89,4
Frontseite / Front side
450,5 +1 -0
464,5 +2,2 -1 *
* Maß liegt in der
DIN 41494
465,1 ±1,8
Fujitsu Siemens Computers
PRIMECENTER II Rack Extendet 1100mm

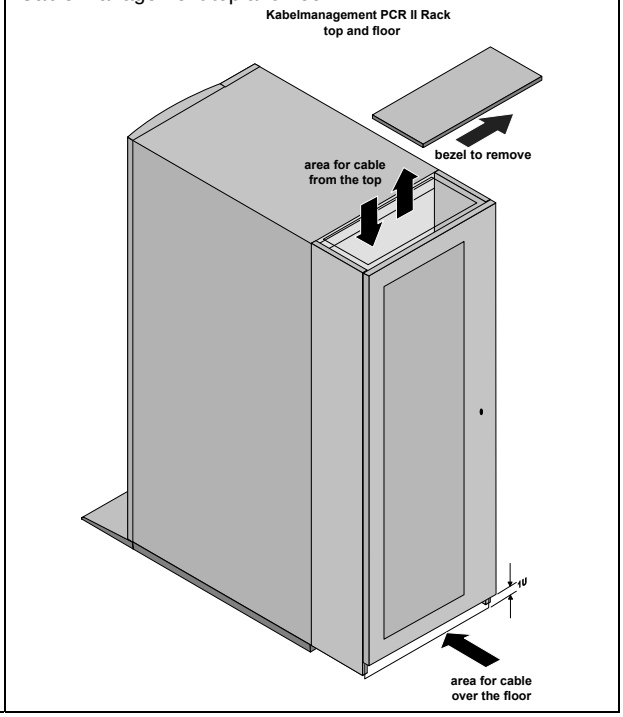
6 PCR rack cabling

6.1 Cabling to and from outside

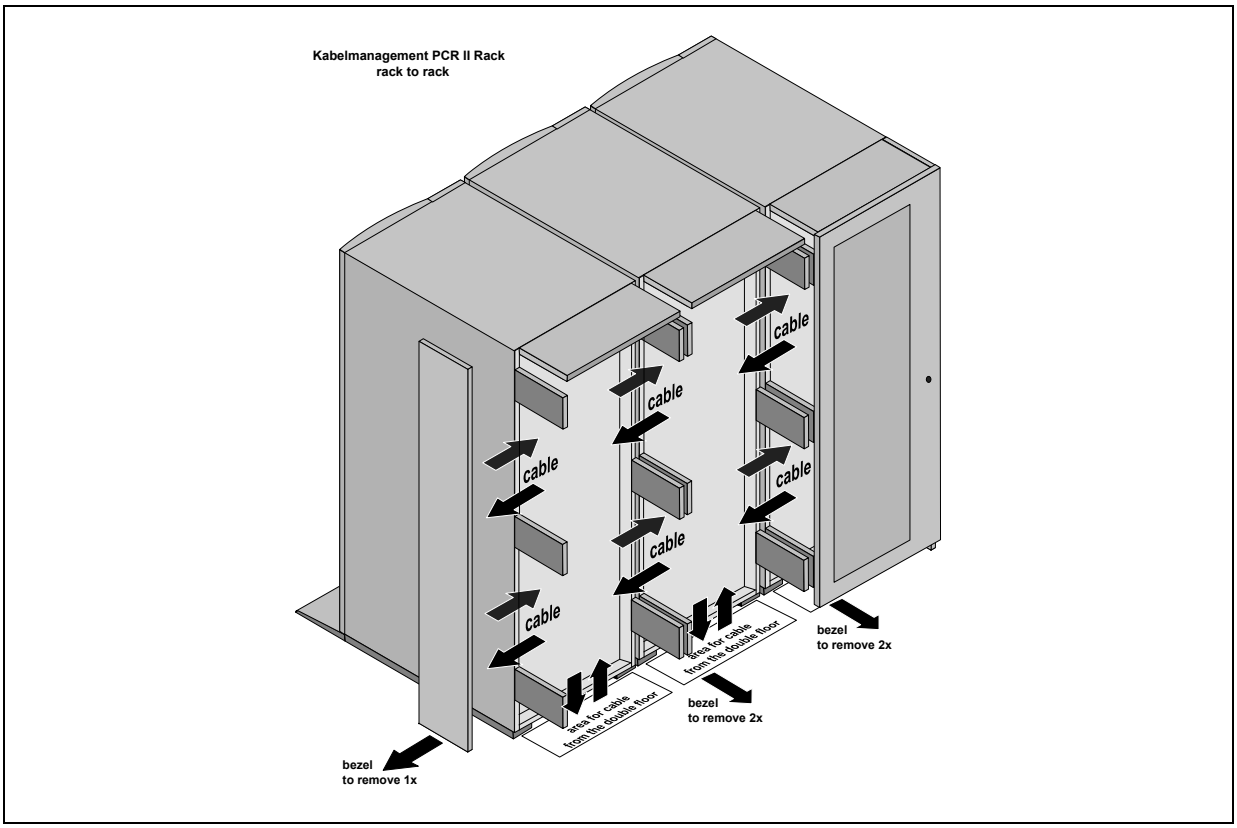
Cable management right or left side



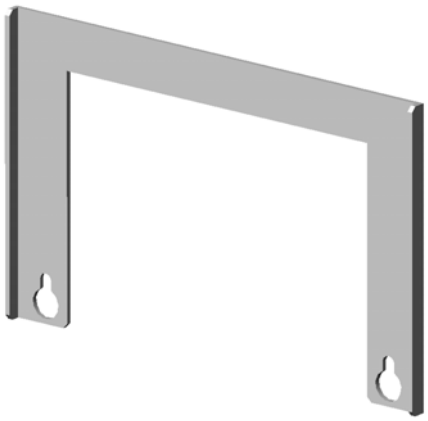
Cable management top and floor

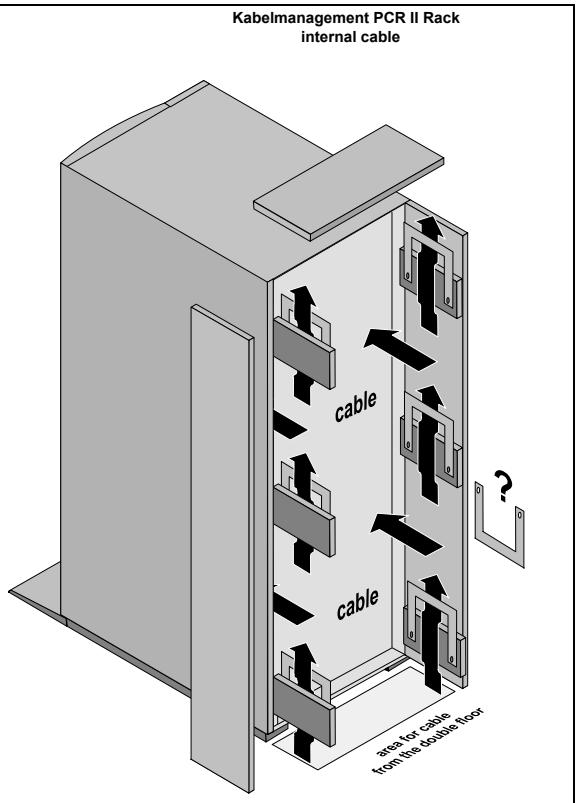


6.2 Cable routing between racks



6.3 Cable management PCR II rack (internal)





Cable routing 160mm in cable management PCR II rack 1100mm, vertical A3C40089759 (only for the rack 1100mm)

7 System cabling strategy

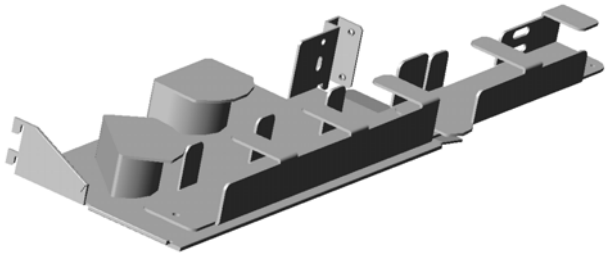
7.1 PCR rack cable manager

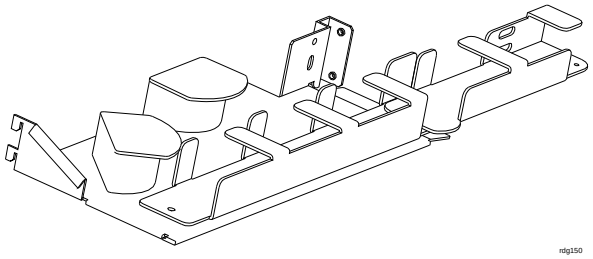
The cable management element is a patented component of Fujitsu Siemens Computers and Knürr. It is used in the DataCenter and PRIMECENTER racks. Unlike conventional cable guides, the cable management is an integral part of the rack and not of the systems that are installed in the rack. This means it can be mounted in the rack types listed above for any assembly from any manufacturer ≥ 2 height units. The articulated cable guide can be mounted in a 1U grid. This compatibility allows consistent rack cabling.

The functional principle is based on an articulated cable guide which is mounted on a carrier plate in such a way that it can be folded in and out. The articulated cable guide follows the installed rack components half-way. The cables are routed in the comb-like cable guide and screwed to the system component.

7.1.1 Figures

Figure 1





The figure shows the cable manager in its idle position.

Figure 2

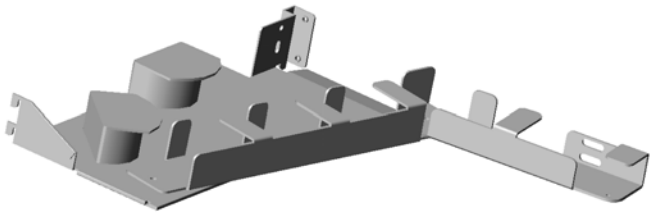
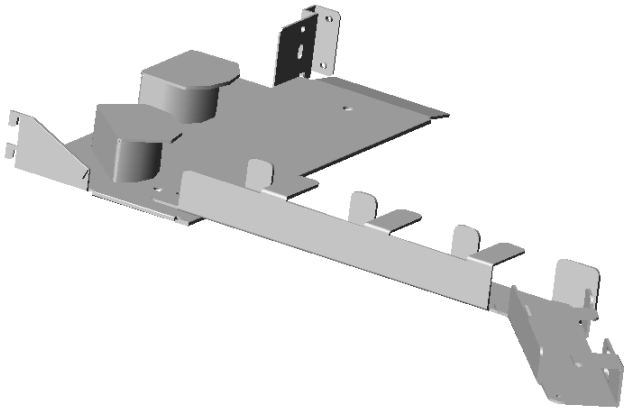
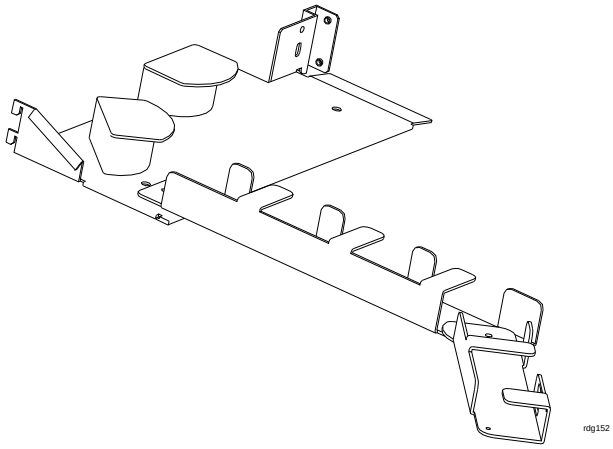


Figure 3



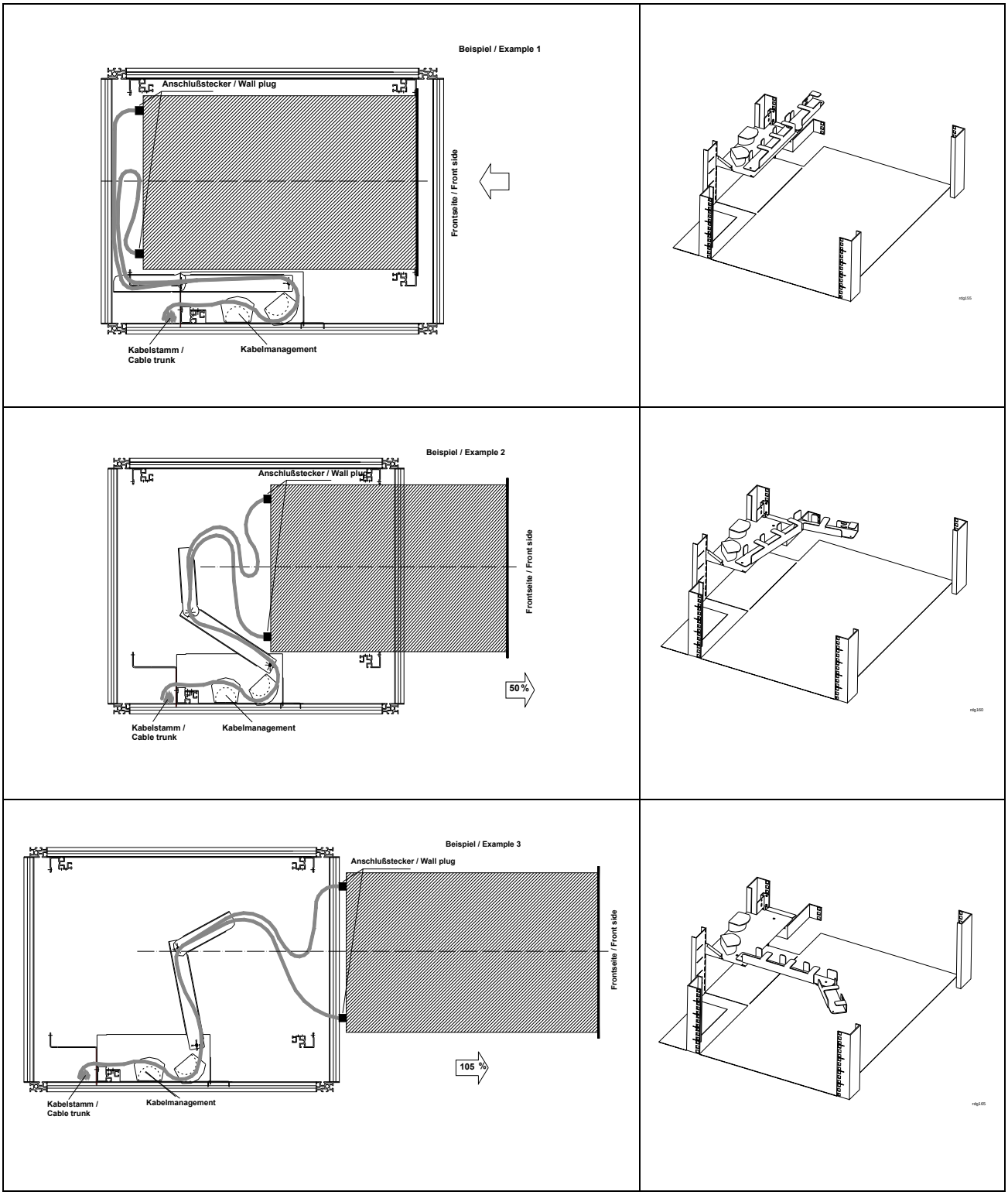


Cable manager with articulated cable guide folded out

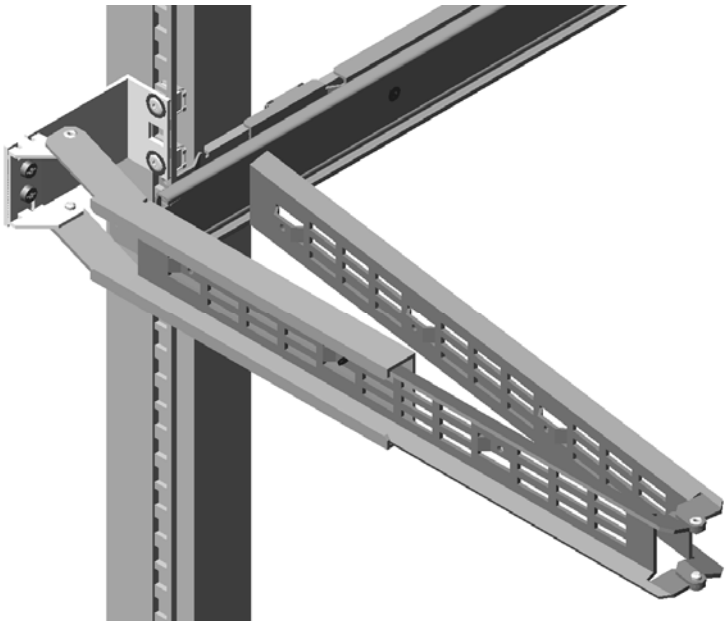
Cabel management PCR Rack
SNP:SY-F2262L20-P; D:GPRAC-ZB527; S26361-F2735-E7 / L7

7.1.2 Cable routing in the cable manager

The following example shows how the cables are routed in the cable manager:



7.2 Cable duct for 3rd party Racks



Cable duct for 3rd party Racks (mounting on right or left side)
Produktnummer: S26361-F2201- E20 / L20
Liefereinheit: A3C40058445

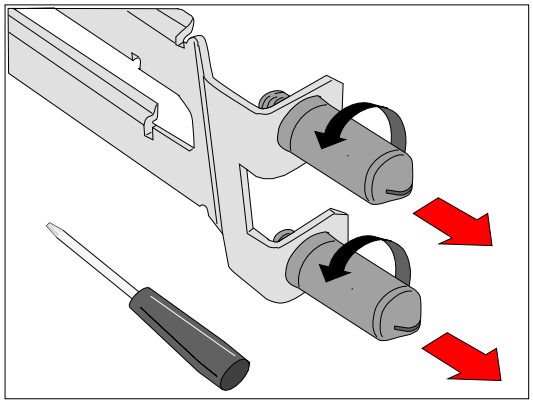
7.3 Cable support

raceway PCR II
S26361-F2735-E20
S26361-F2735-L20

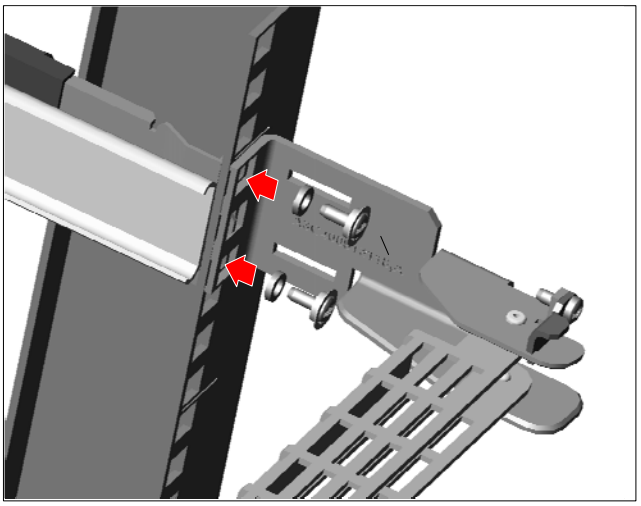
The cable guide accommodates and holds cable harnesses. Like the cable management element, it can be mounted in the 1U grid of the rack.

7.4 Cable duct 1U to trail

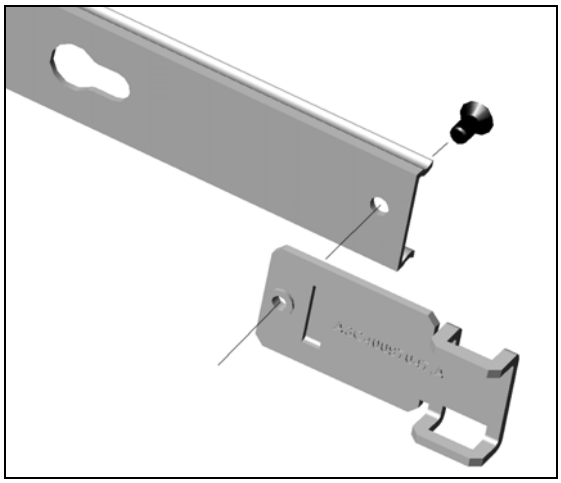
mountig



step 1
dismount bolts
from the vario carrier

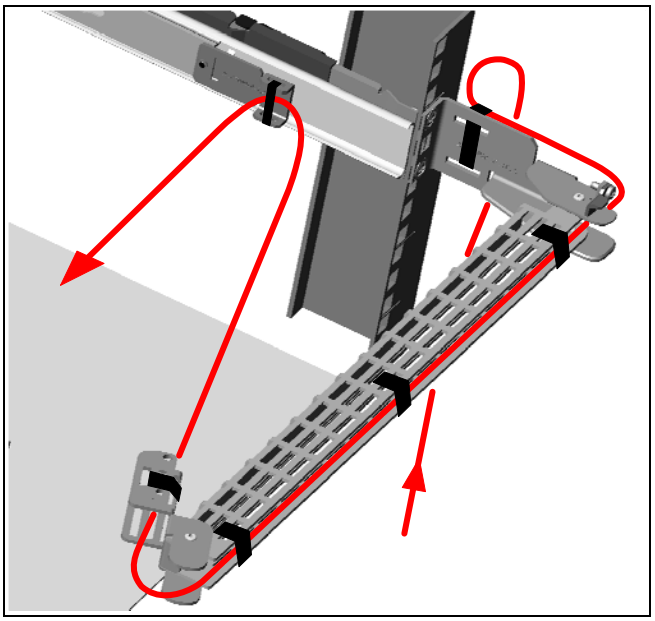


step 2
mounting
cableduct



A3C40097047

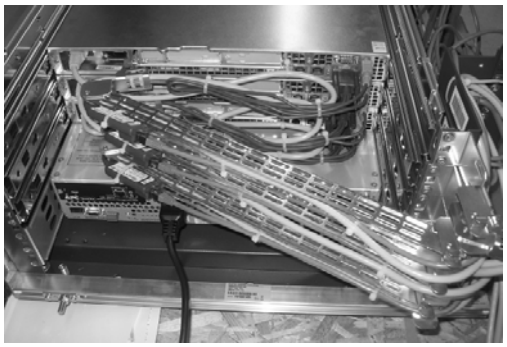
step 3
mounting
cable conector on the telescopic rail

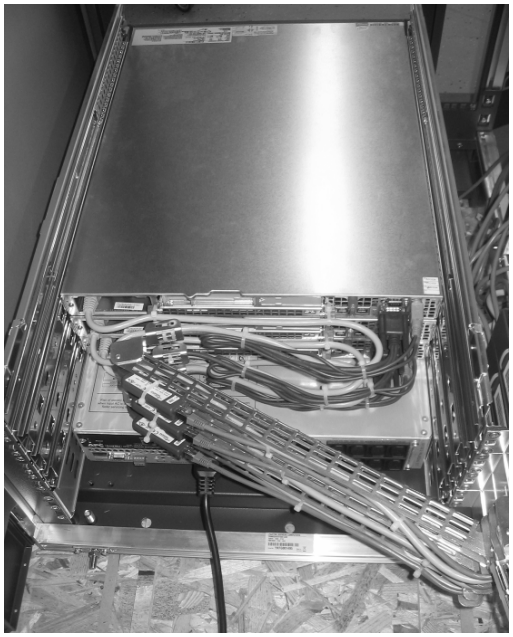


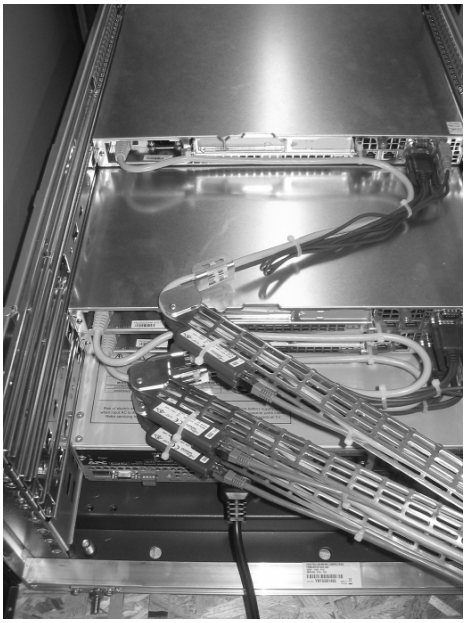
step 4
cabling
cableduct

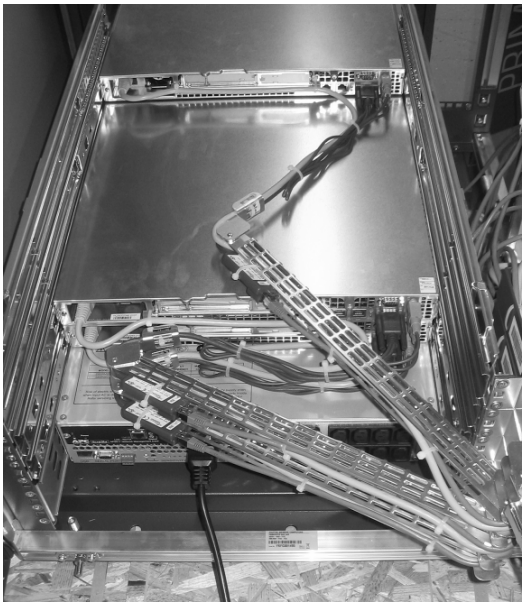
Cable duct 1U
S26361-F2735- E8 / L8
A3C40086204

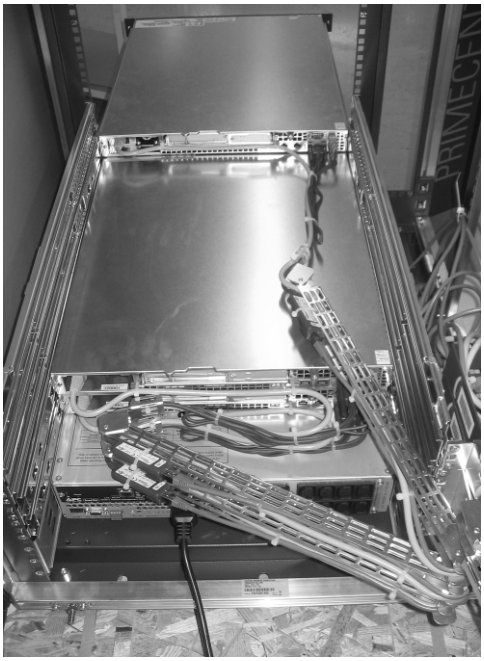
Examples of cabling



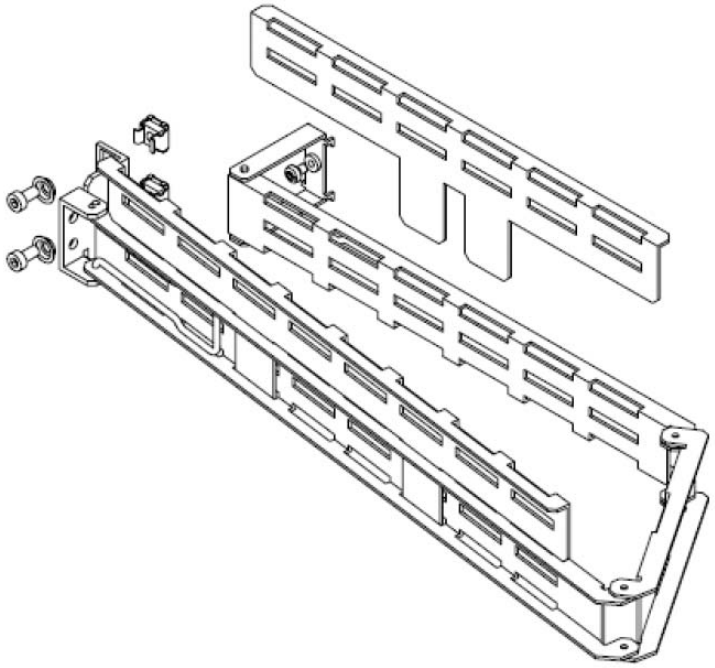








7.5 2U cable duct



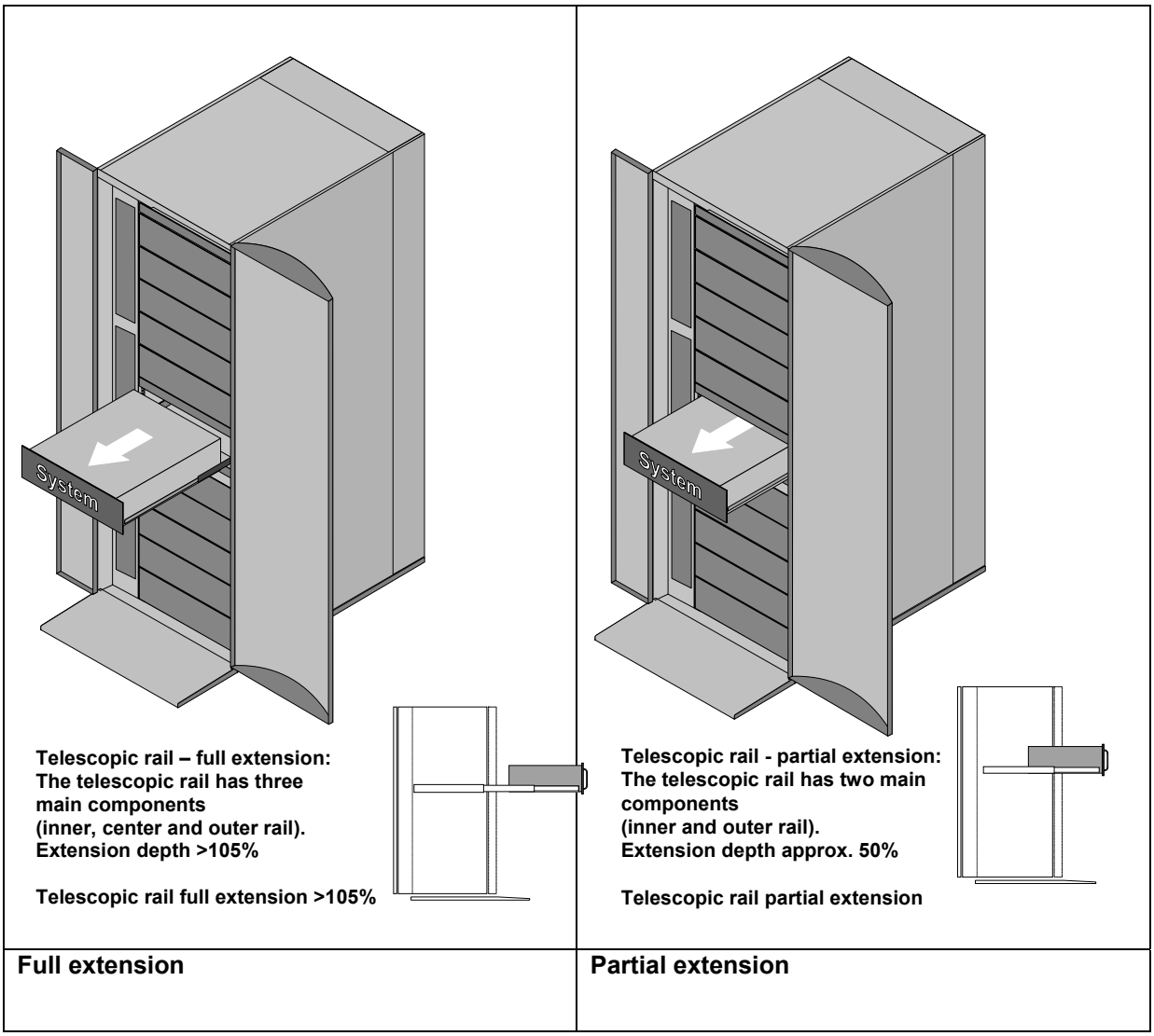
Cable hinge arm with bushing
D:GPRAC-ZB523

8 Carrier system

8.1 Basics

As well as in a fixed installation, the 19” rack components can also be mounted on sliding or telescopic rails which allow them to be pulled out of the rack. The ball-bearing telescopic rails are available in two different versions.

8.1.1 Extension type



Telescopic rail – full extension:
The telescopic rail has three main components (inner, center and outer rail).
Extension depth >105%

Telescopic rail full extension >105%

Telescopic rail - partial extension:
The telescopic rail has two main components (inner and outer rail).
Extension depth approx. 50%

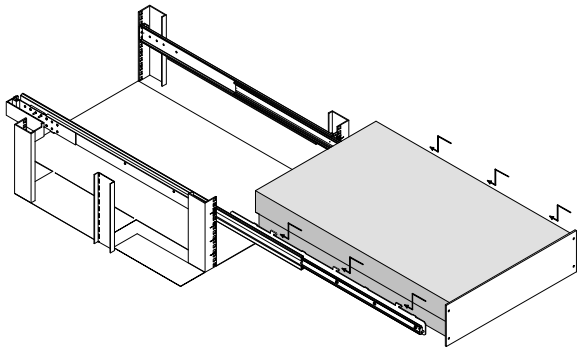
Telescopic rail partial extension

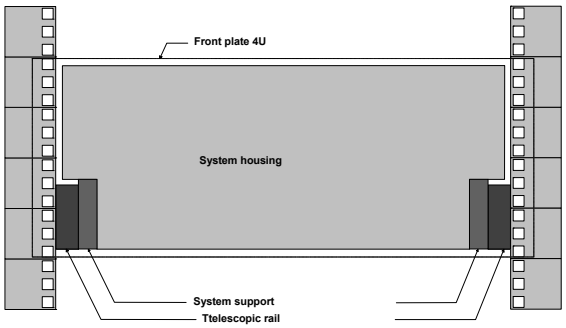
Full extension	**Partial extension**

8.1.2 Mounting the system on telescopic rails (installation examples)

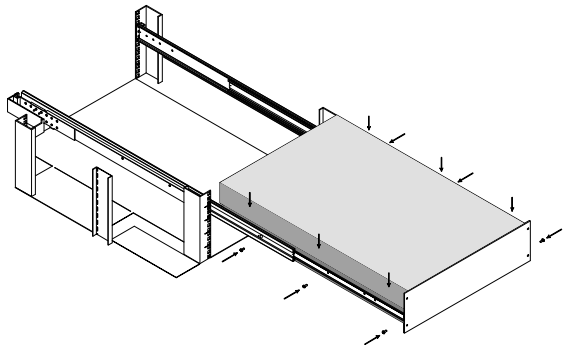
There are three primary ways of mounting systems on telescopic rails:

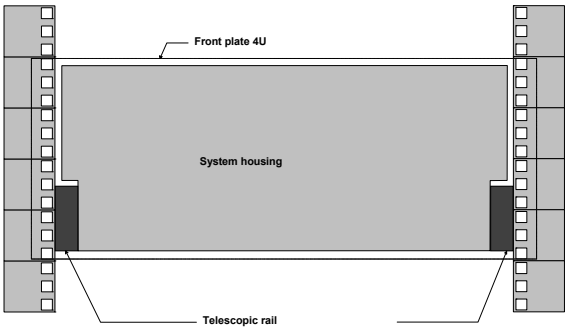
1. Sliding the system onto a system support plate and securing it.
2. Screwing the system directly to the inner telescopic rail. In this case, you replace the system by separating the rails.
3. There are shoulder screws on the system housing which engage in the keyholes of the inner telescopic rail.



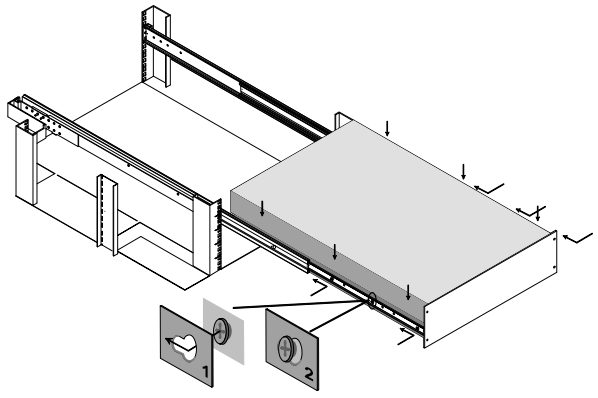


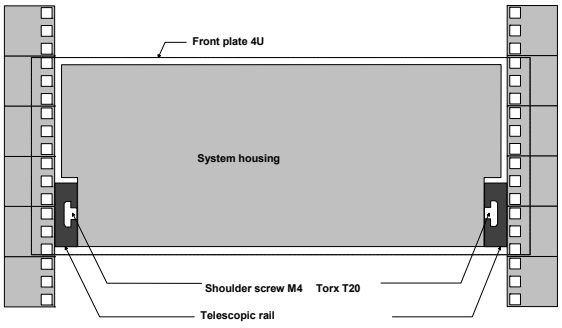
System mounted on system support plates (high safety during mounting!)





System screwed directly to the telescopic rail



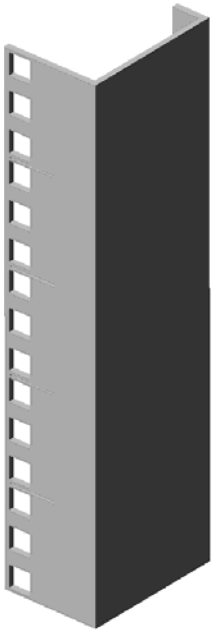


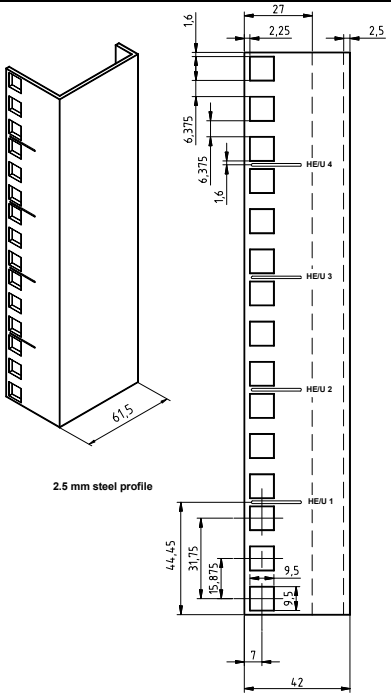
System with shoulder screw for keyhole engagement / KEYHOLE
Shoulder screw M4 Torx T20 A3C40071737

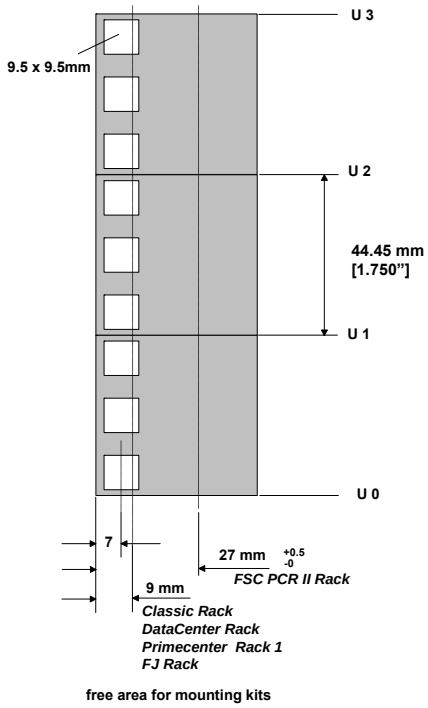
8.1.3 Basics of the structural design of the carrier systems for FSC, Fujitsu and third-party racks

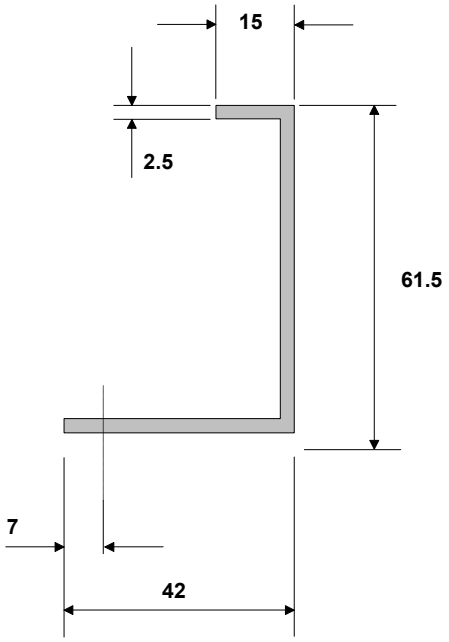
A basic requirement for designing carrier systems is compliance with the EIA-310-D 19-inch standard and information on the different carrier profiles on the market.

FSC PCR rack and most third-party racks	



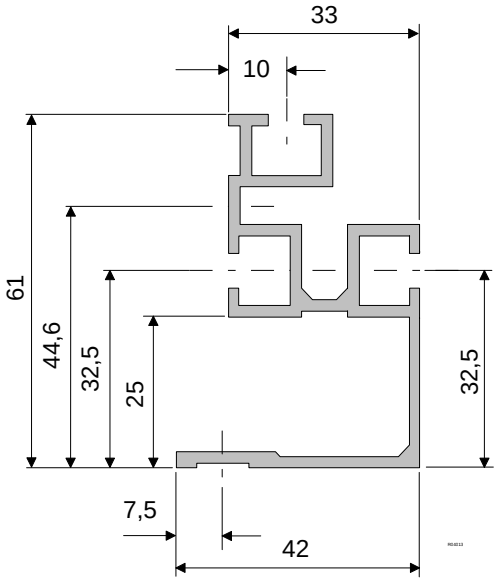






vertical extrusion with mounting holes 9.5 x 9.5 ± 0.1mm (EIA-310-D Standard)	**FSC PRIMECENTER Rack II 19" (PCR II) [9.5mm ± 0.1 = 0.375 ± 0.004" square]**

FSC DCR rack and Fujitsu rack

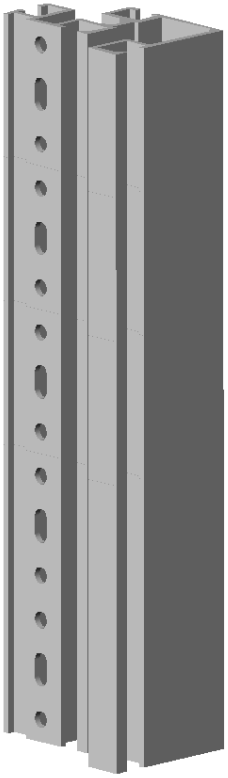


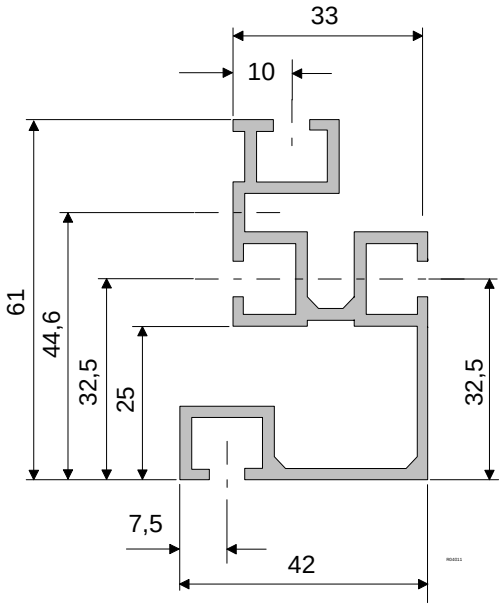
2 mm Alu Stranggussprofil

vertical extrusion with mounting holes 9 x 9mm

FSC DataCenter rack; Fujitsu rack; Knürr miracel rack

FSC and Knürr Classic rack

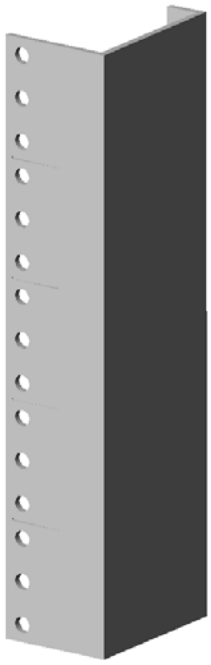
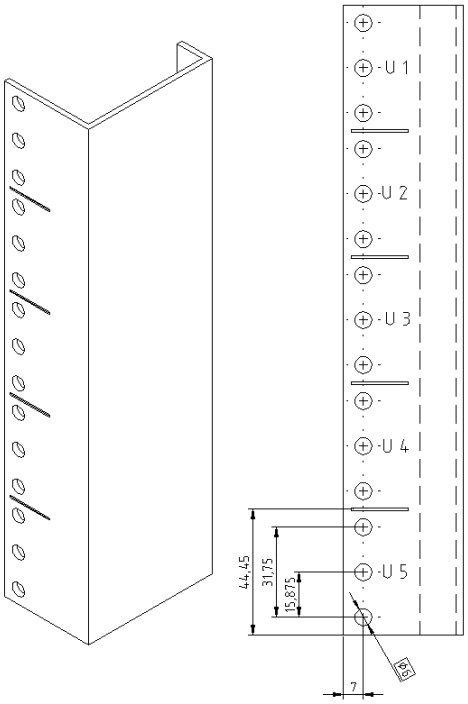
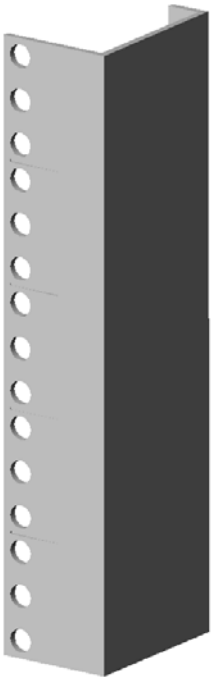
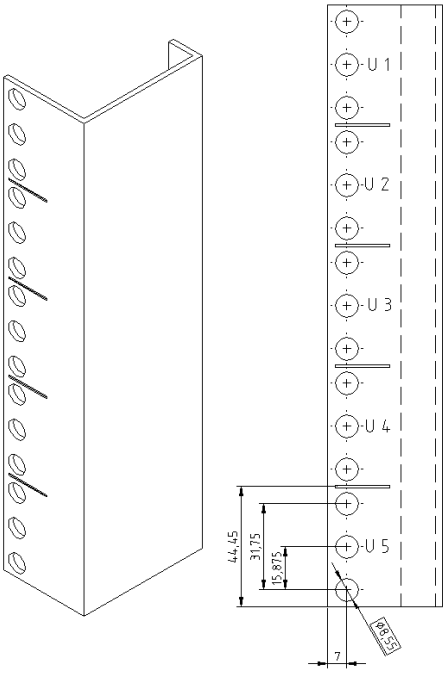




2 mm Alu Stranggussprofil

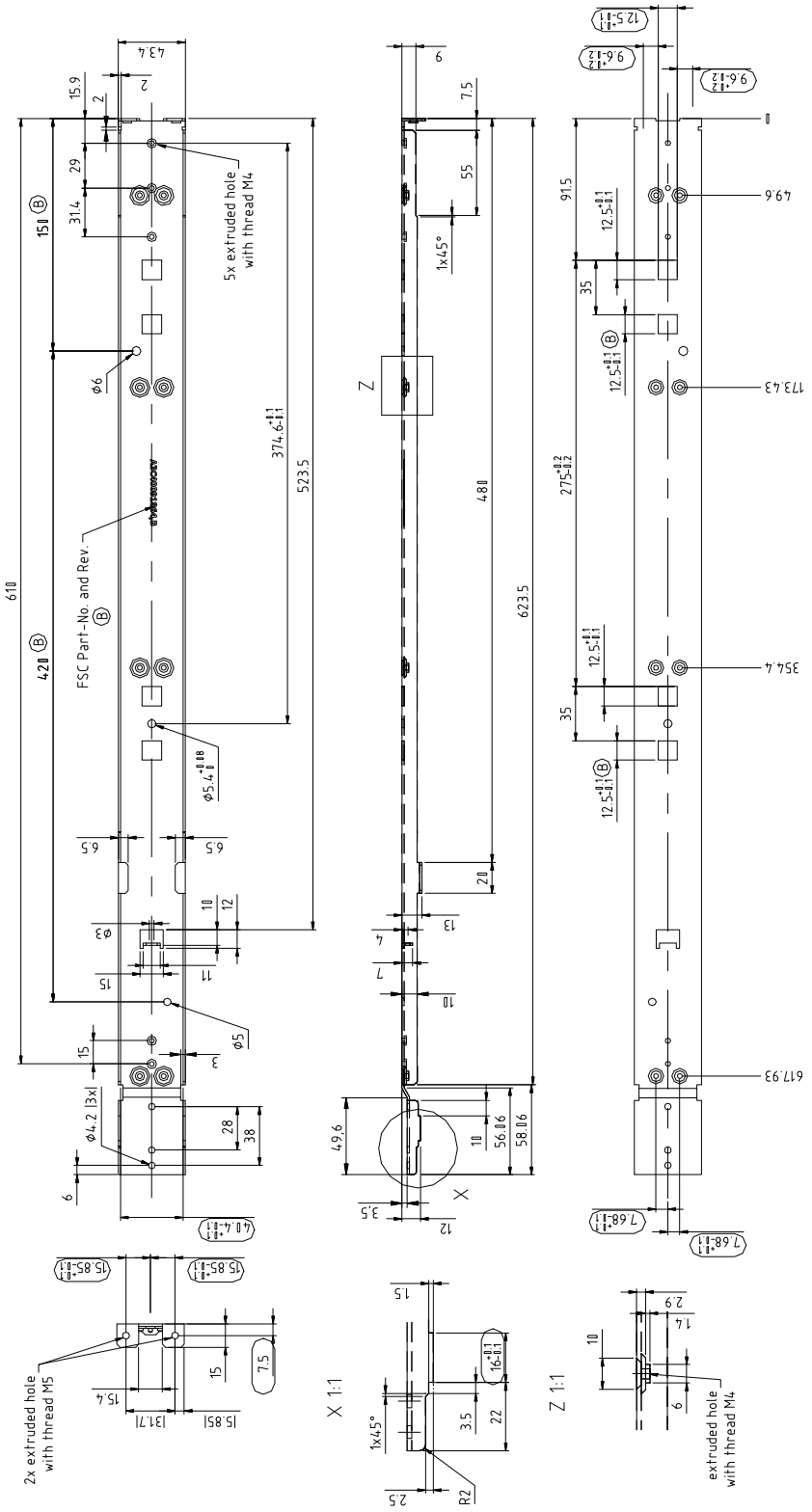
vertical extrusion with T-slot

FSC Classic Rack

US 6mm 	US 6mm 
19” rack vertical profile (US) 6mm / 0.24” Ø	**[HP Rack 7.1 ±0.1mm / 0.28 ±0.004” Ø]**
US 8.5mm 	US 8.5mm 
19" rack vertical profile (US) 8.5 ±0.1mm Ø	**(8.5mm = 0.33")**

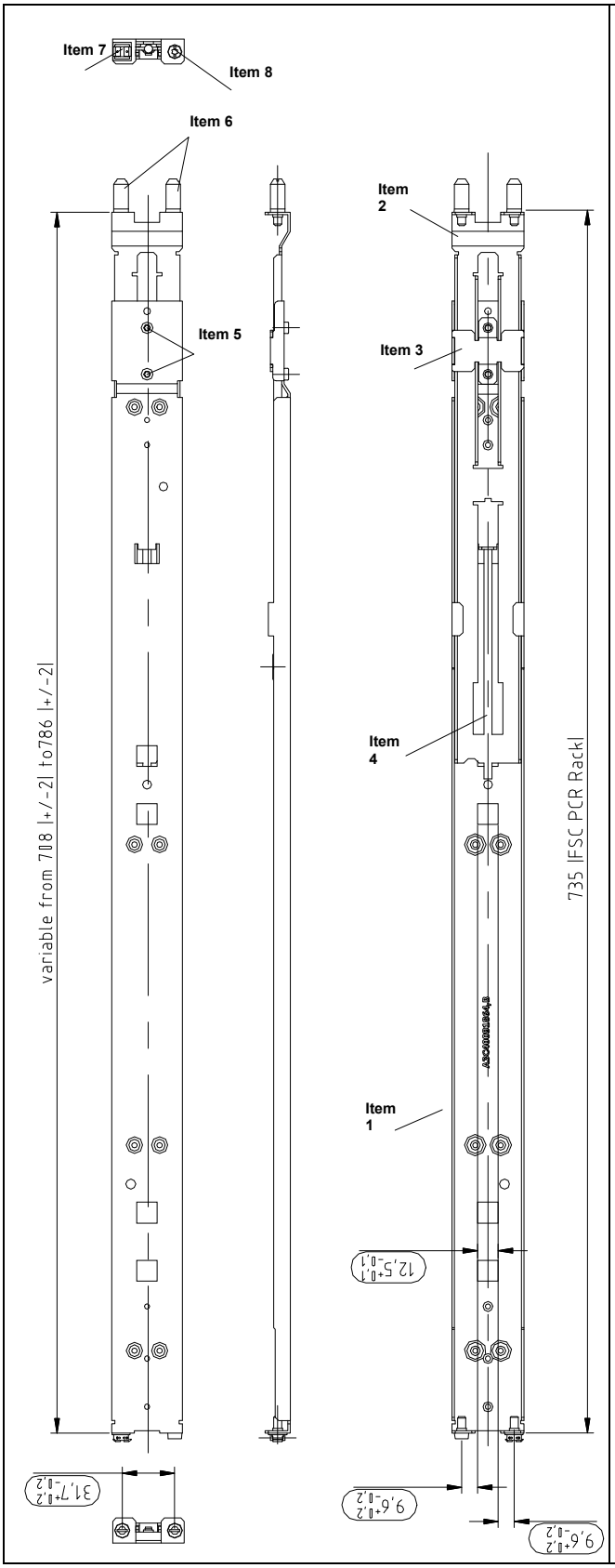
8.2 Vario carrier system 714 – 786mm*

8.2.1 Scale drawing



A3C00291125

8.2.2 Complete drawing

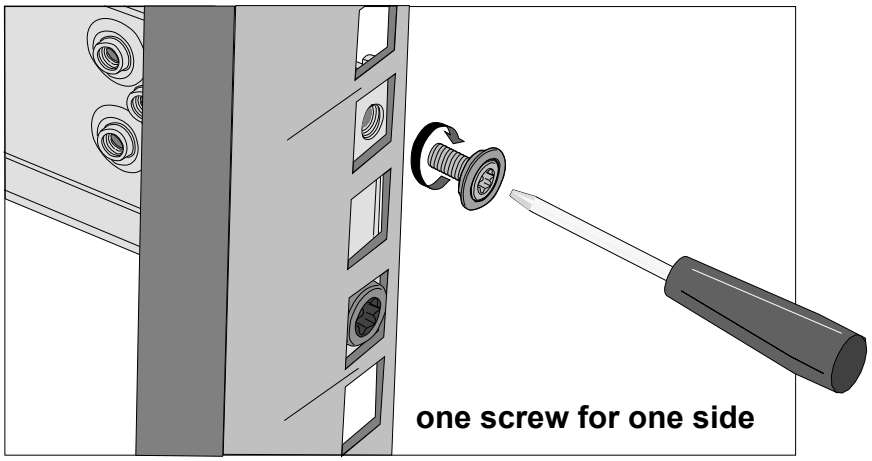


List of parts

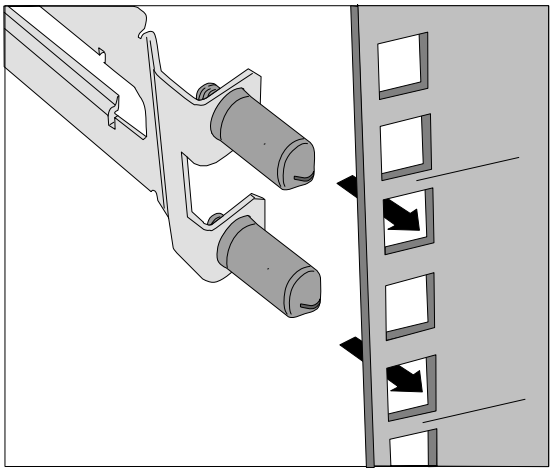
Item 1: Front telescopic rail carrier
Item 2: Rear telescopic rail carrier
Item 3: Guide plate
Item 4: Extension spring
Item 5: Cylinder-head screw M4x6 mm
Item 6: Guide pin
Item 7: Centering screw M5
Item 8: Vario lock

8.2.3 Vario-Träger one hand mounting

one hand mounting in a EIA-310-D standard rack

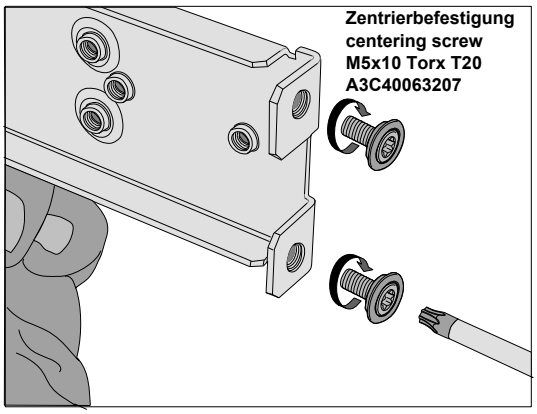


front side



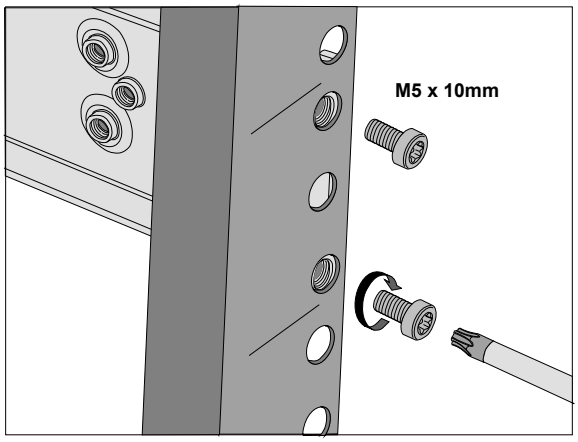
back side

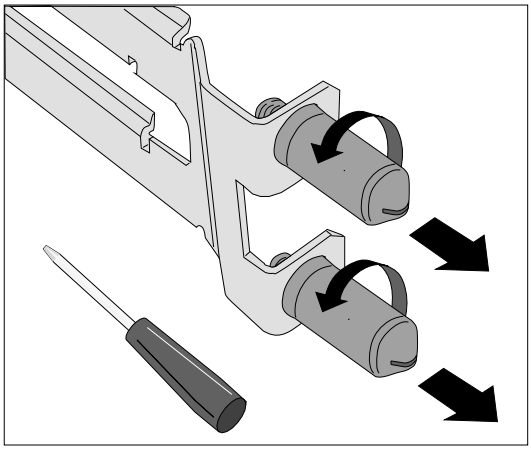
8.2.4 Vario-Träger mounting with centering screws

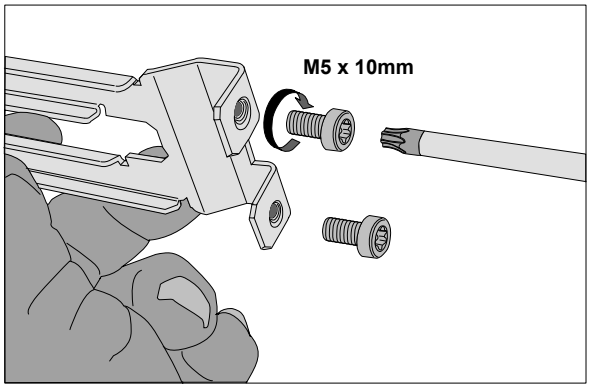


8.2.5 Vario-Träger mounting in round holes

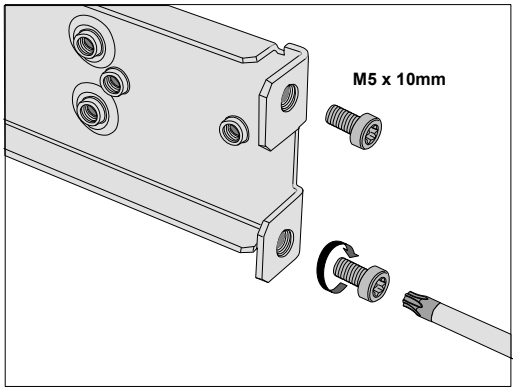
mounting vario carrier in US racks with round holes







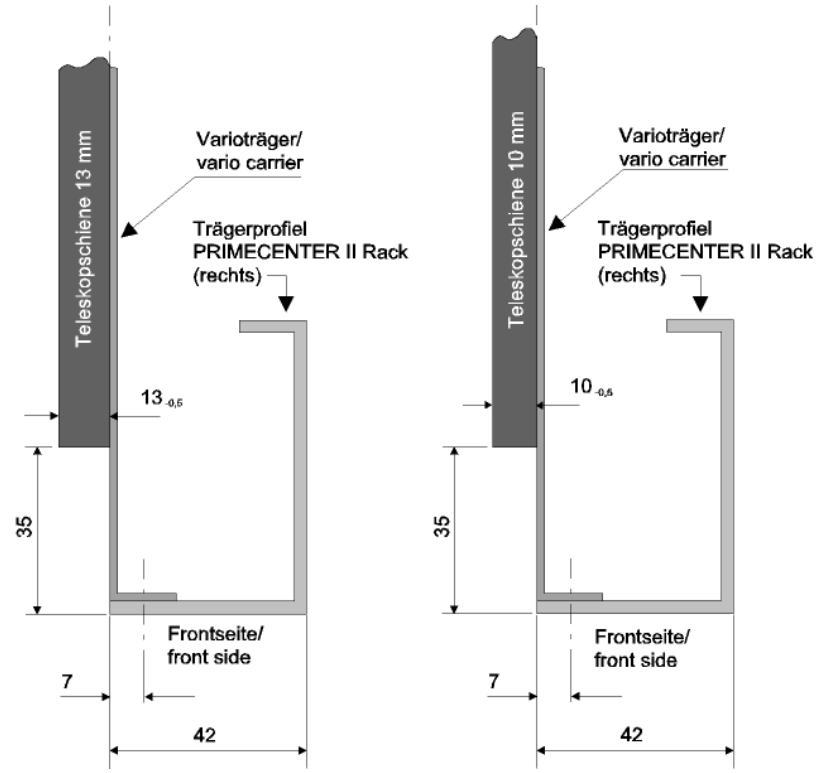
mounting the vario carrier on the back side from the rack with M5 screws



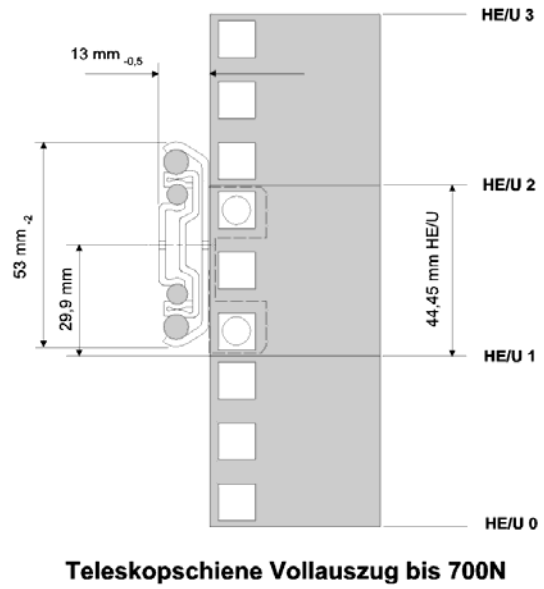
mounting the vario carrier on the front side from the rack with M5 screws

8.3 Telescopic rail

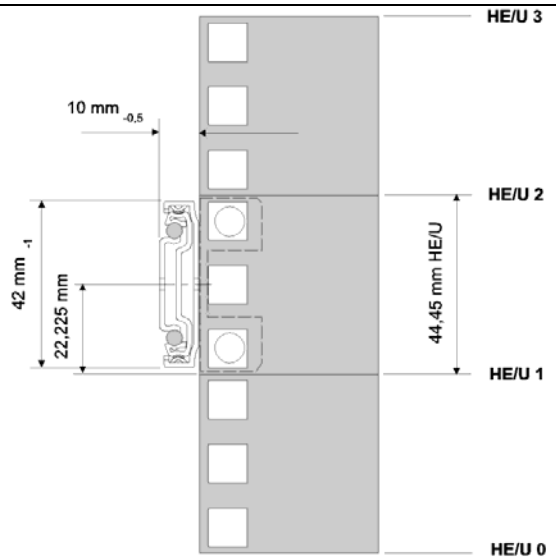
8.3.1 Requirements and important dimensions



Position of the telescopic rail on the Vario carrier relative to the 19-inch installation plane (top view)

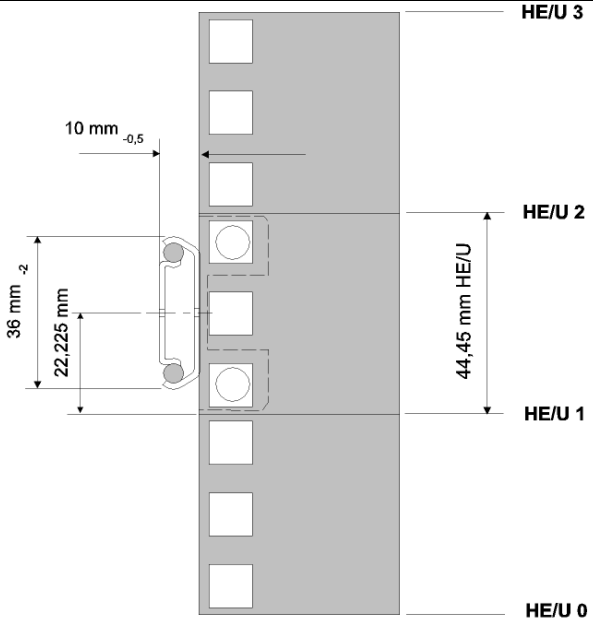


Position of 13mm telescopic rail relative to U



Teleskopschiene Vollauszug bis 300N

Position of10mm telescopic rail relative to U

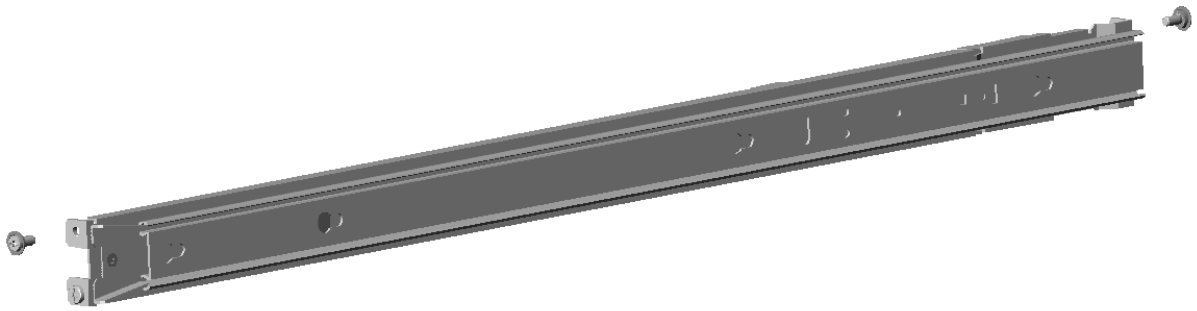


Teleskopschiene Teilauszug bis 250N

Position of 10mm telescopic rail (partial extension) relative to U

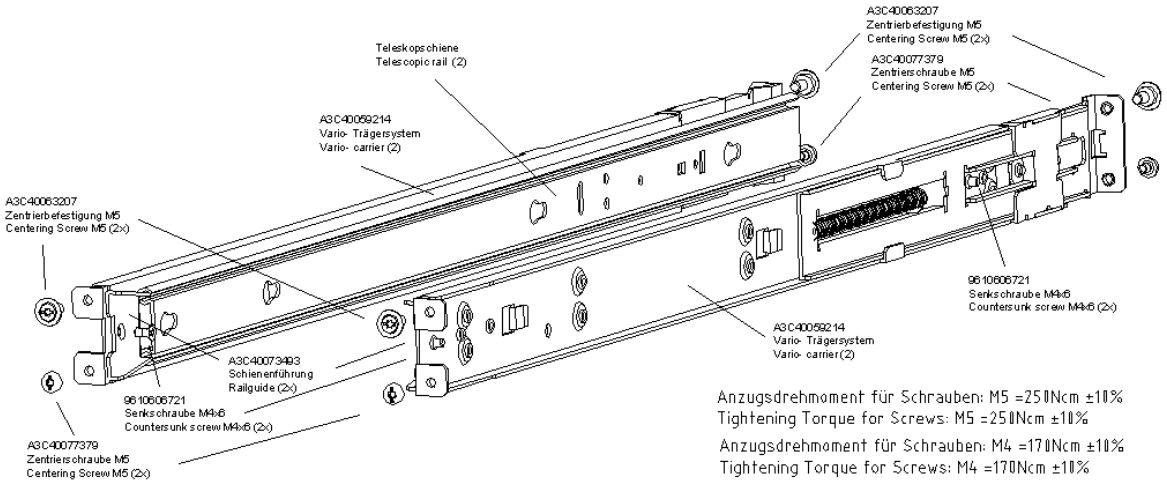
8.3.2 Example of telescopic rail with partial extension

Carrier system 1U



Carrier for server with shoulder screw M4 – partial extension slide

Carrier system 1U

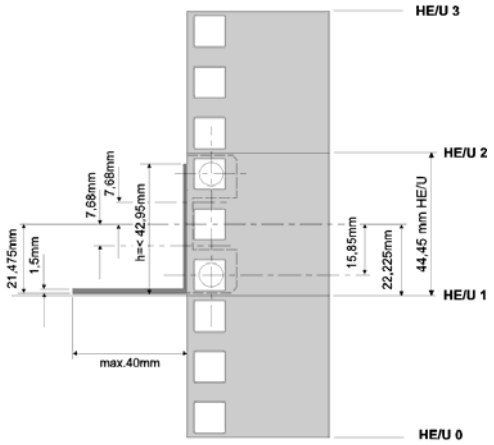


Carrier for server with shoulder screw M4 – partial extension slide

8.4 Sliding rail

Sliding rails are used for static installation of rack components which are completely removed from the rack for service and maintenance. They do not allow the component to be pulled out completely and, in special cases, provide tilt protection and a stopper. Based on the Vario carrier, they are designed as different versions for the specific areas of use.

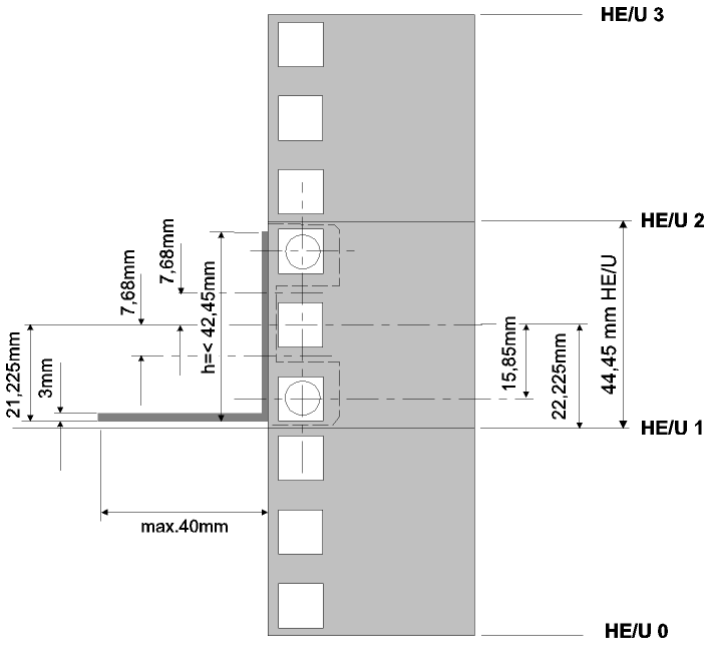
8.4.1 1.5mm sliding rails (design example 1)



Gleitschiene 1,5mm

Position of 1.5mm sliding rail relative to U

8.4.2 3mm sliding rails for heavier load (design example 2)



Gleitschiene 3mm

Position of 3mm sliding rail relative to U

8.5 Others

8.5.1 Horizontal mounting of PDU 32A

<table>
<tr>
<td> </td>
<td> </td>
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<td>Einbausatz PDU 32A
Horizontal 19“

A3C40076828
S26361-F2262-E301 / L301</td>
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9 Accessories

9.1 Fastening accessories

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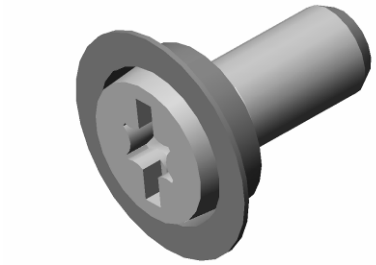
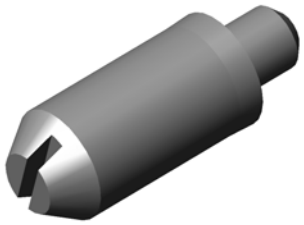
<td>  </td>
<td>  </td>
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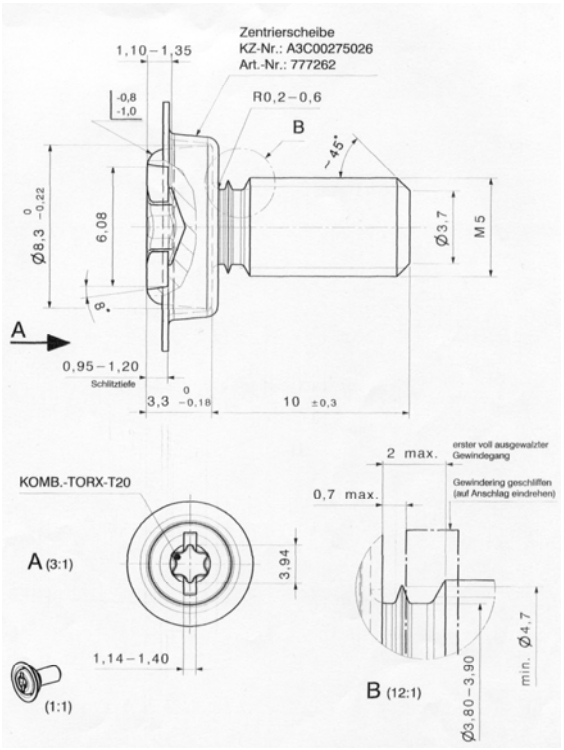
<td> 
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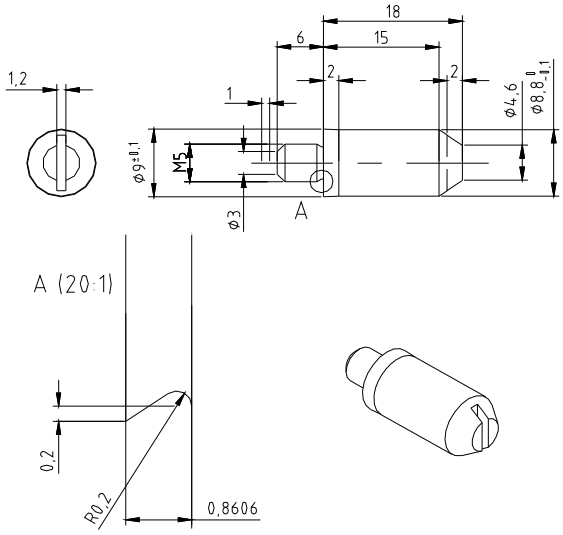
<td> 
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<td>Zentrierbefestigung M5 Torx T20
Centering screw M5 Torx T20
A3C40063207</td>
<td>Haltebolzen M5 / bolt M5
A3C40088218</td>
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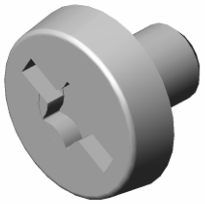
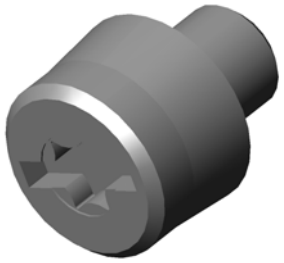
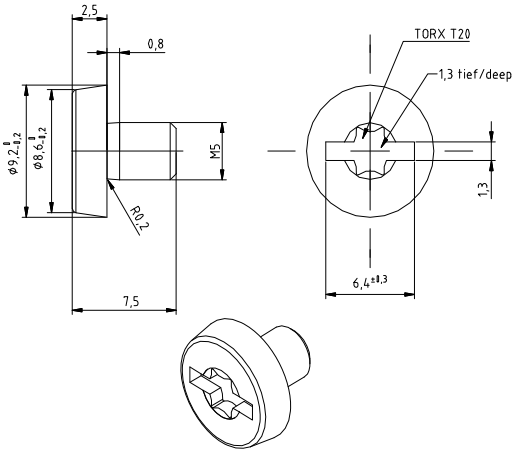
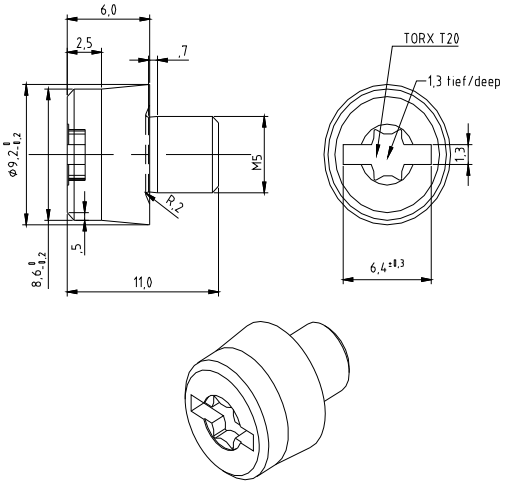


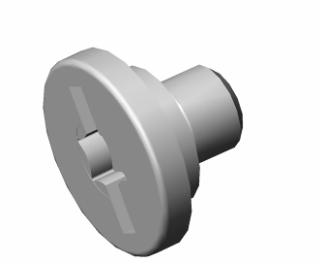


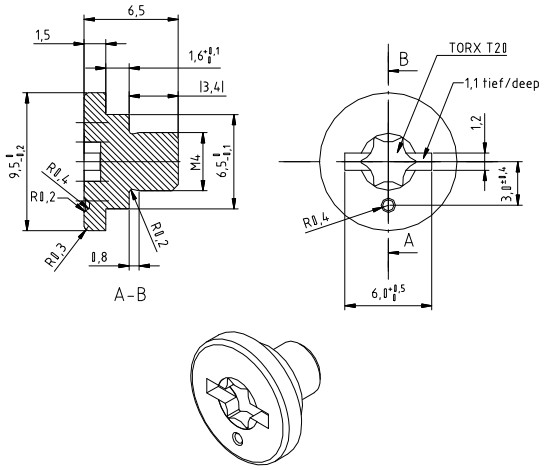


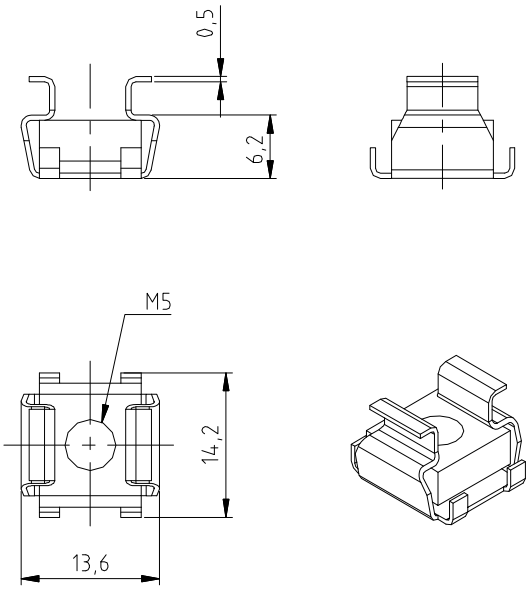


Zentrierschraube M5 Torx T20
Centering screw M5 Torx T20
A3C40077379

Zentrierschraube M5 II Torx T20
Centering screw M5 II Torx T20
A3C40095430

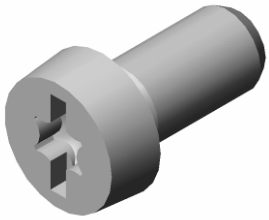
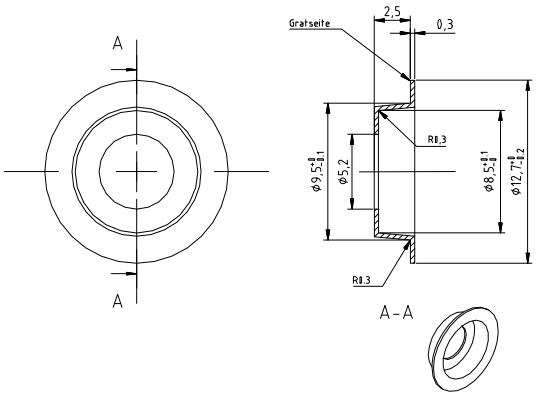
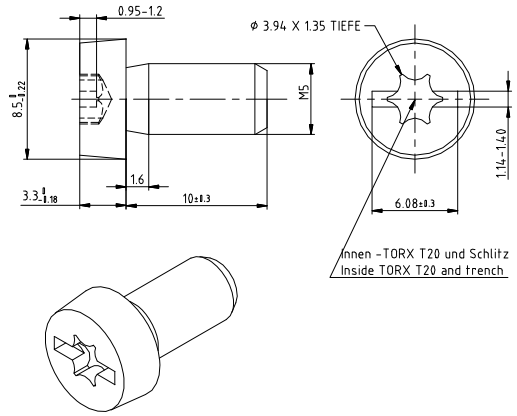


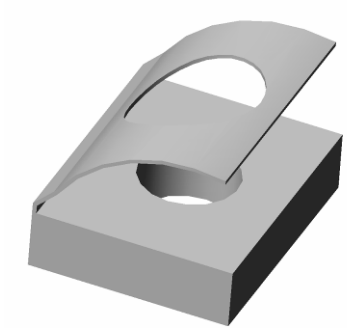
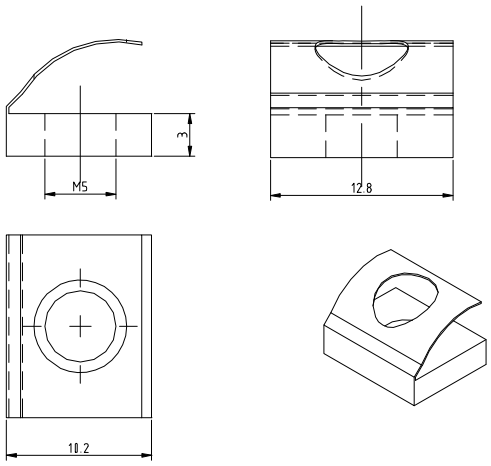
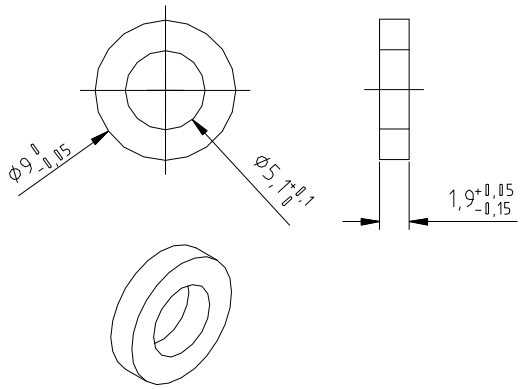


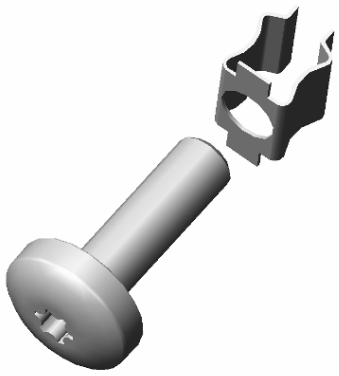
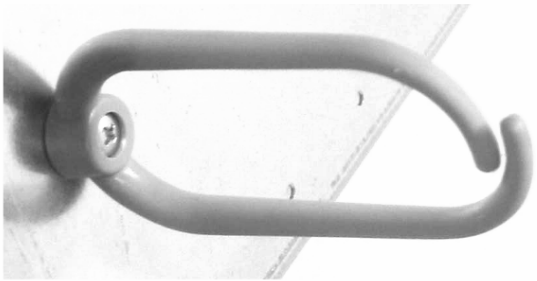


Ansatzschraube M4 Torx T20
Shoulder screw M4 Torx T20
A3C40071737

Käfigmutter M5, Käfigmutternsatz M5 (50Stck)
Cage nut M5 S26361-F2735-L500
0007000120

Zentrierscheibe II.bmp	Zylinderschraube M5x10.bmp
	
Zentrierscheibe II_02.wmf	Zylinderschraube M5x10_02.wmf
	
Zentrierscheibe II **Centering washer II** **A3C40063203**	**Zylinderschraube M5x10 Torx T20** **Pan head screw M5x10 Torx T20** **9601310021**

Federmutter M5.bmp 	zs_01.bmp
Federmutter M5_02.wmf 	Zs_01.wmf 
Federmutter M5 **Sring nut M5** **A3C40014728**	**Zentrierscheibe für 1U Kabelarm** **Centering washer 1U cable duct** **A3C40082271**

DUZ lock M6 	Cable guide 
Mounting system for dummy panel **screw M6 A3C40066469** **crank A3C40066468**	**Cable guide, x5** **D:GPRAC-ZB5501**

Two universal mounting plates are available for mounting different multiple-socket outlets. They can be mounted in the 19-inch grid and in any free position on the spring grooves of the carrier profiles.

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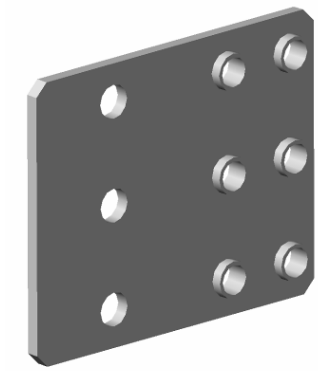
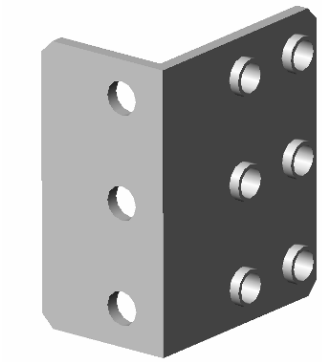
  </td>
<td>Mounting plate 2 for multiple-socket outlets
  </td>
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 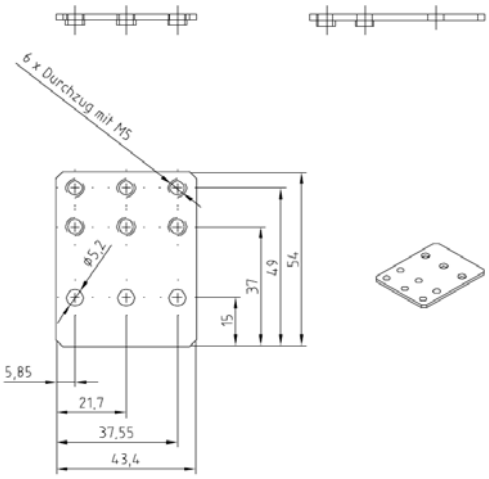
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 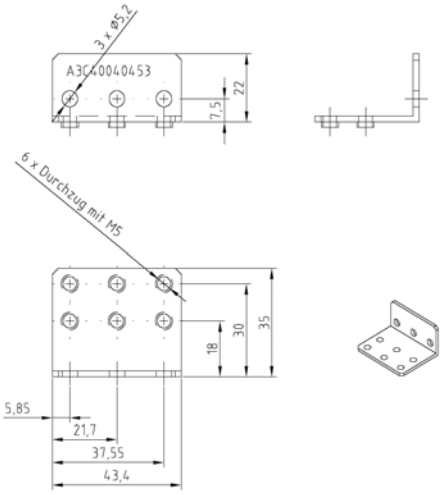
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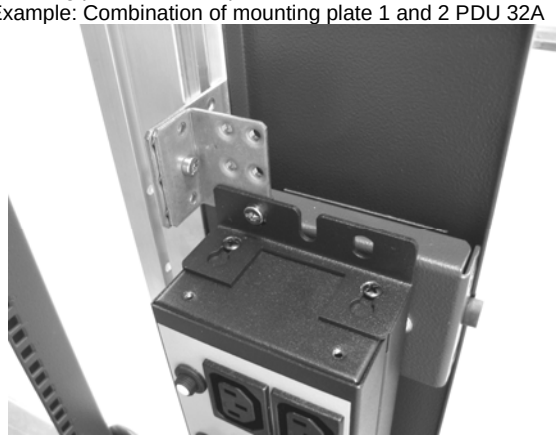
<td>Mounting plate 1 for multiple-socket outlets
Example: Combination of mounting plate 1 and 2 PDU 32A
  </td>
<td>Mounting plate 1 for multiple-socket outlets
 </td>
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<td>Mounting plate 1 multiple-socket outlets
A3C40037444</td>
<td>Mounting plate 2 multiple-socket outlets
A3C40040453</td>
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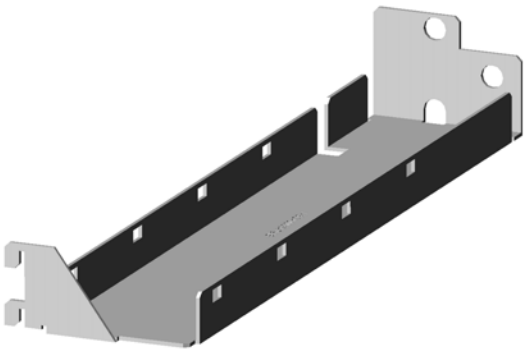
9.2 Mounting elements and equipment shelves

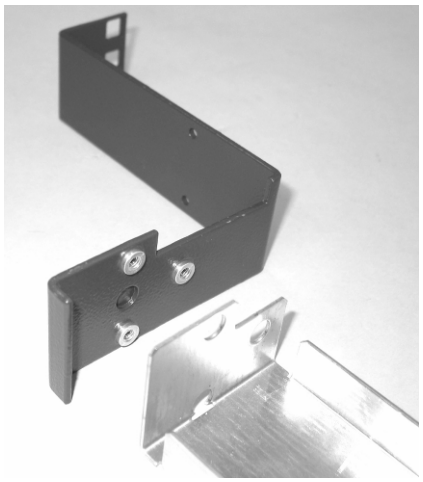
9.2.1 Power supply holder RSB

PS holder RSB

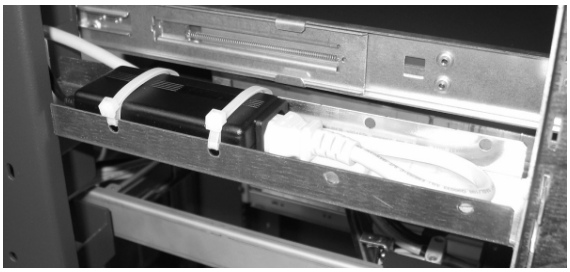


PS holder RSB

PS holder RSB

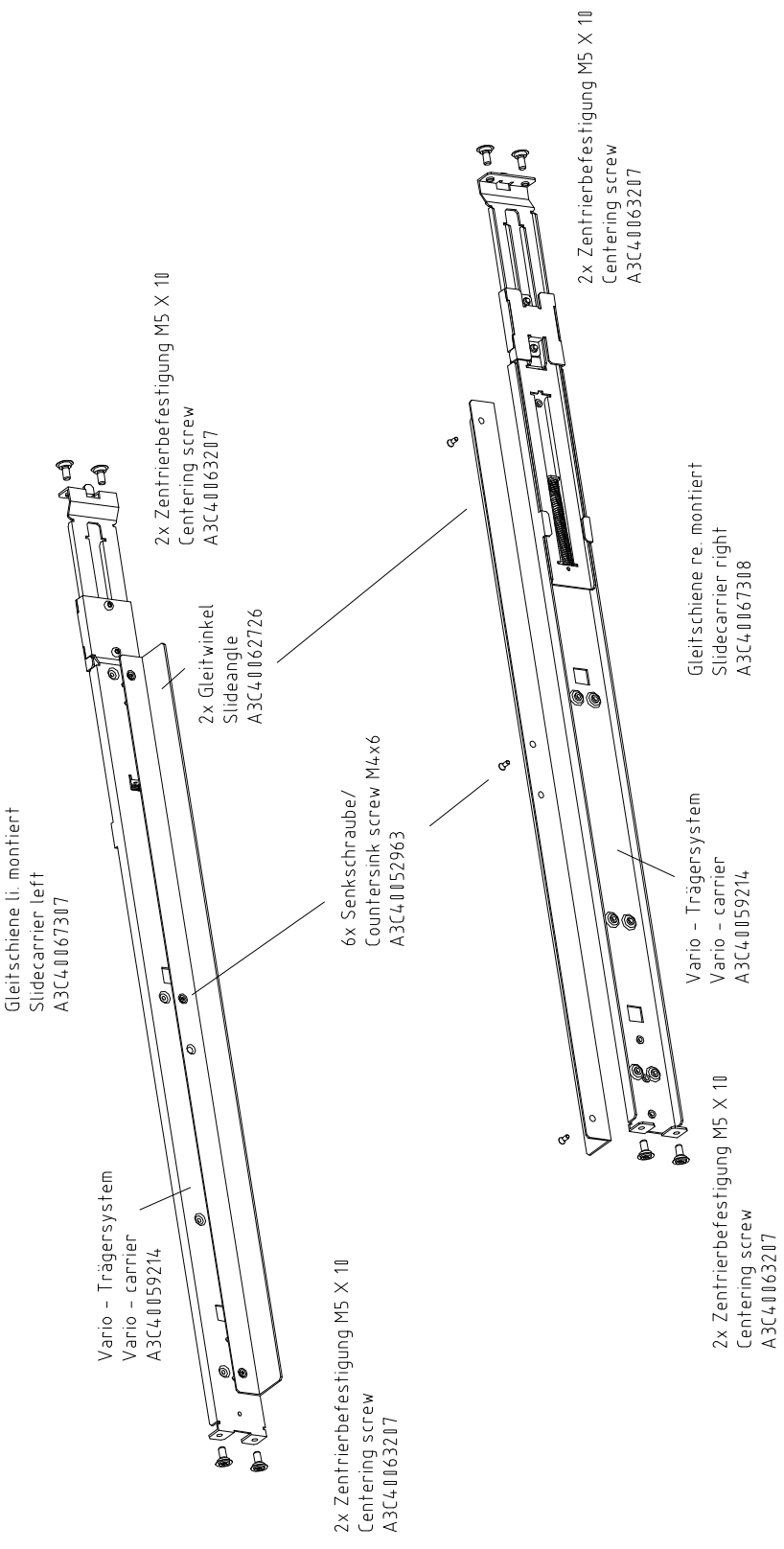


PS holder RSB



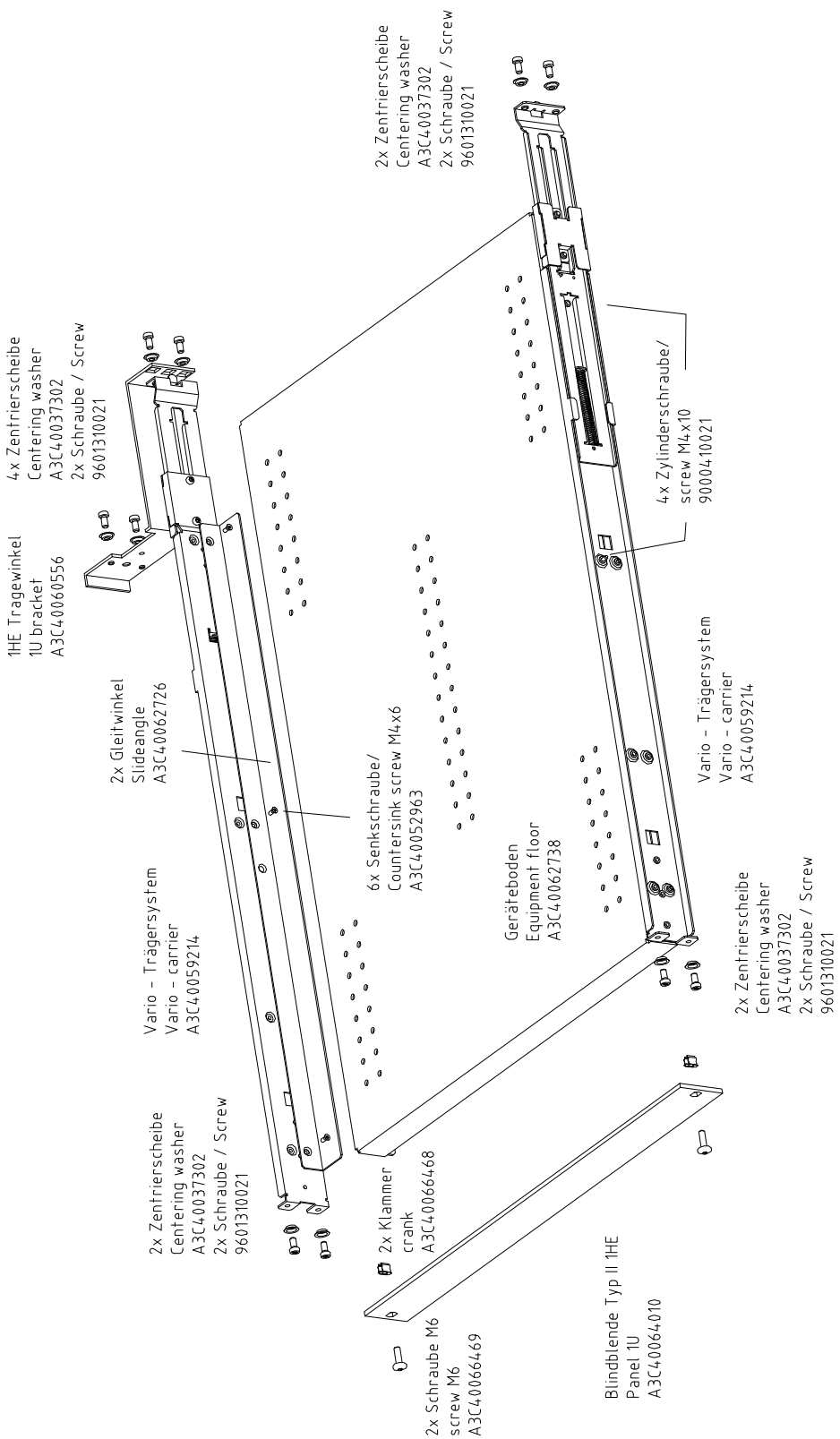
PS-holder RSB
A3C40065479

9.2.2 Pair of sliding rails



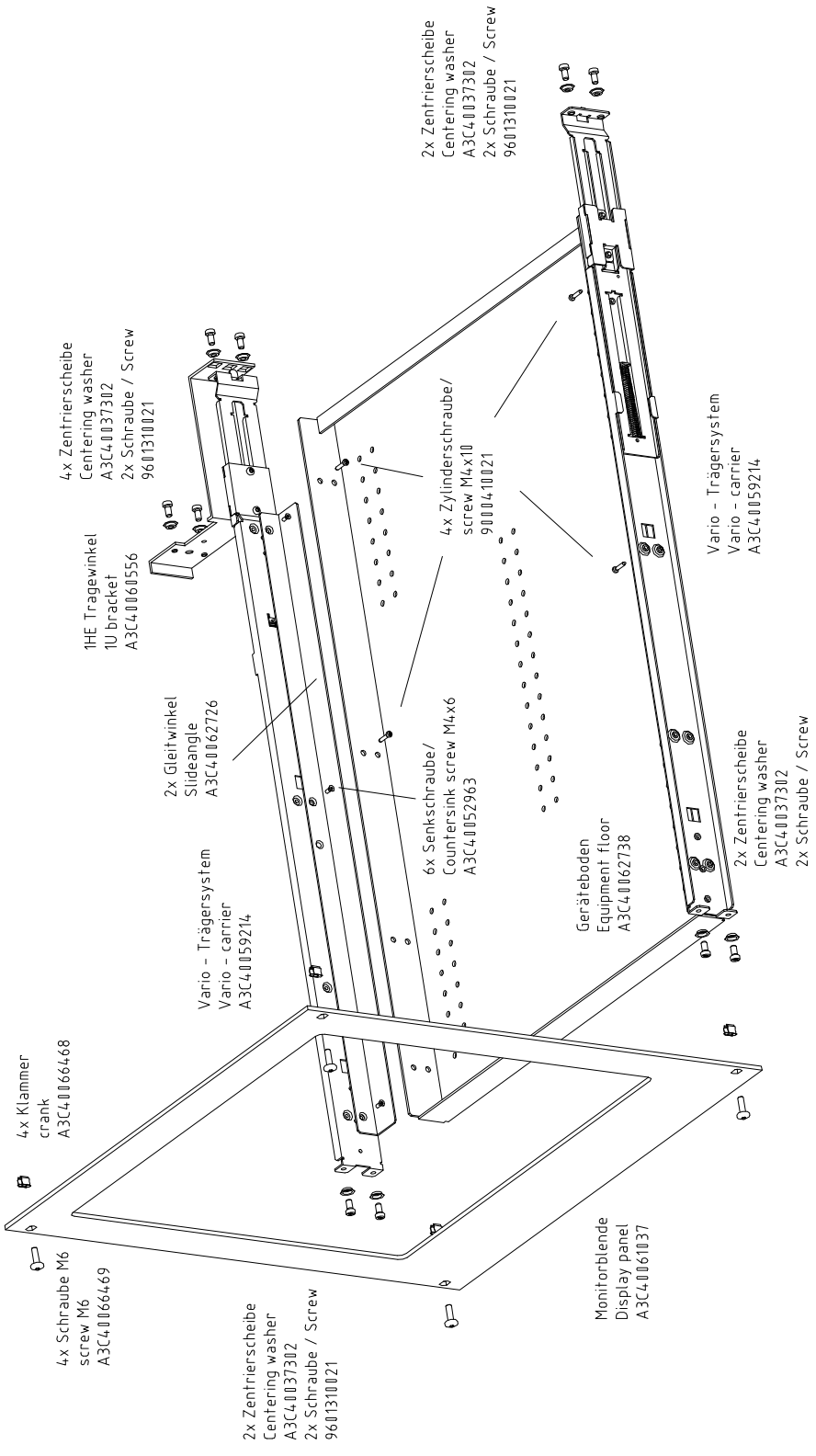
slide rail kit
A3C400672887

9.2.3 Equipment shelf



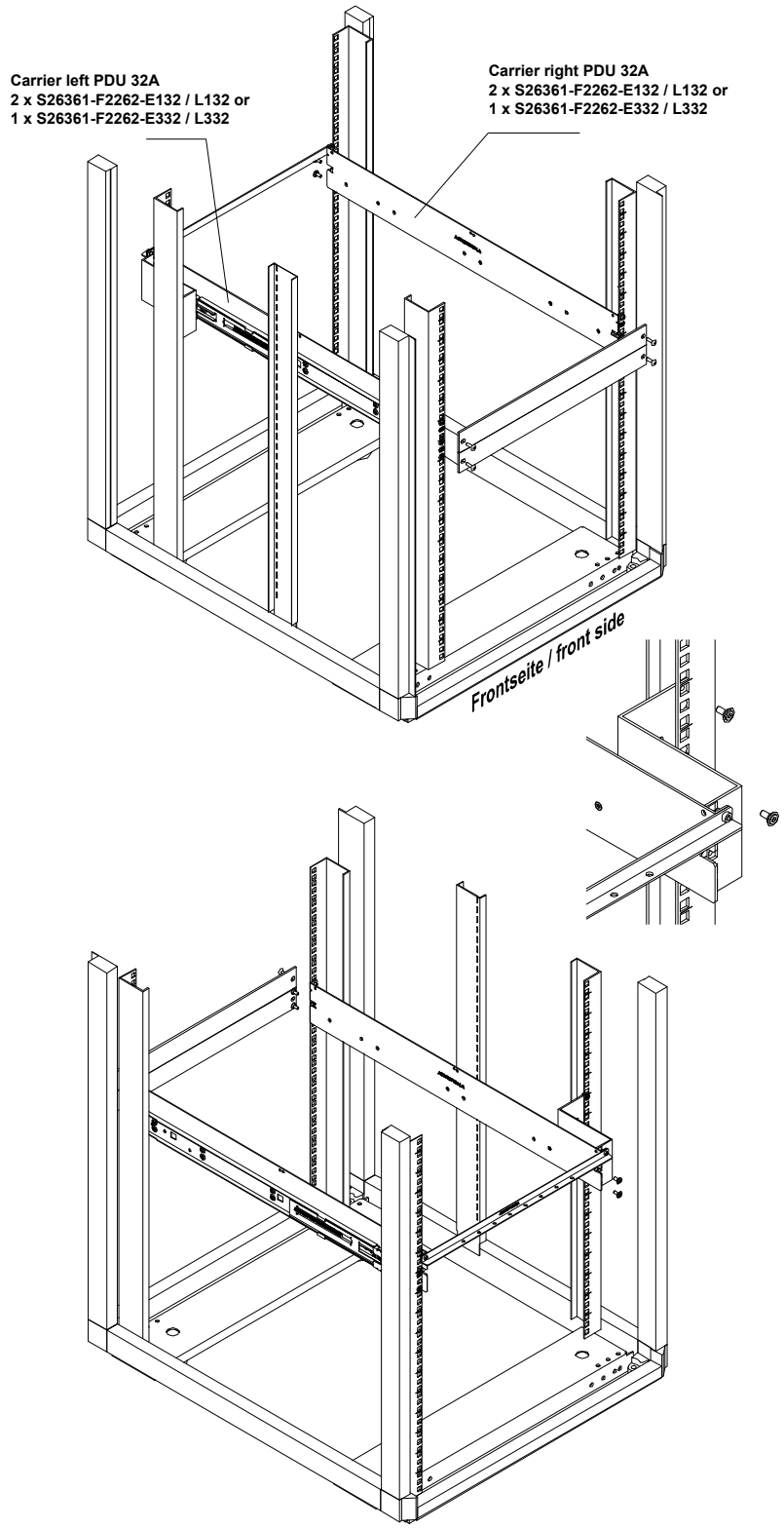
equipment floor
S26361-F1609-E35 / S26361-F1609-L135

9.2.4 Monitor shelf



monitor floor
S26361-F1609-E17 / S26361-F1609-L17

9.2.5 Horizontal mounting of PDU 32A



mounting kit PDU 32A (horizontally)
S26361-F2262-E301 / S26361-F2262-L301

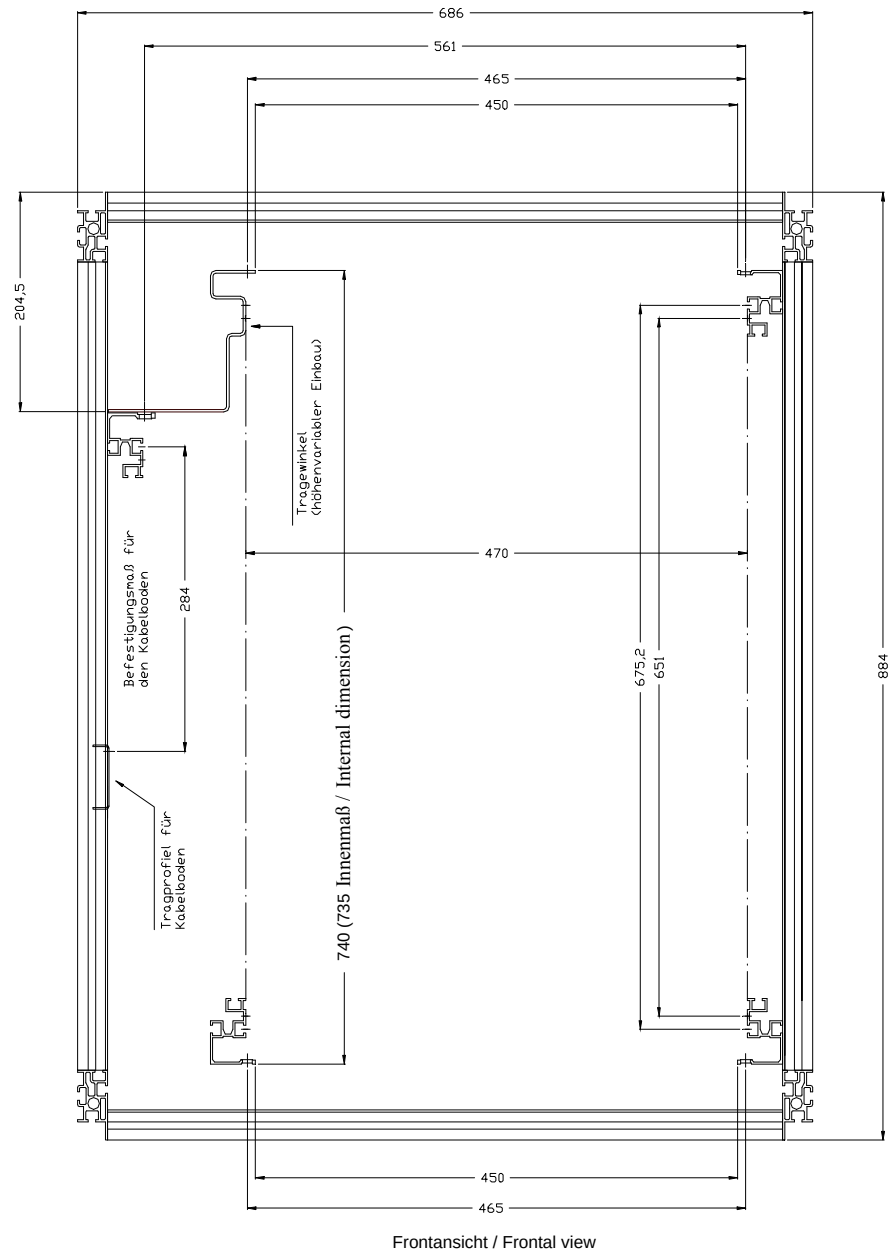
10 Appendix

10.1 Third-party racks / older racks (structure and dimensions)

10.1.1 DataCenter Rack

Since 2002, the DataCenter rack (depth: 900mm) has been the standard rack for PRIMERGY servers in the FSC portfolio. At the end of 2002 it was replaced by the PRIMECENTER S2 rack and was available in the following versions:

Layout

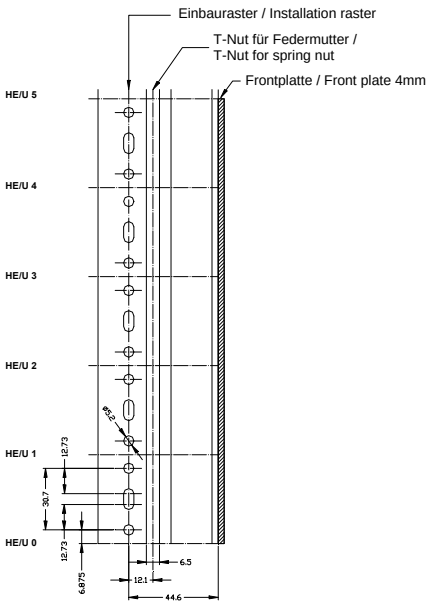


Frontansicht / Frontal view

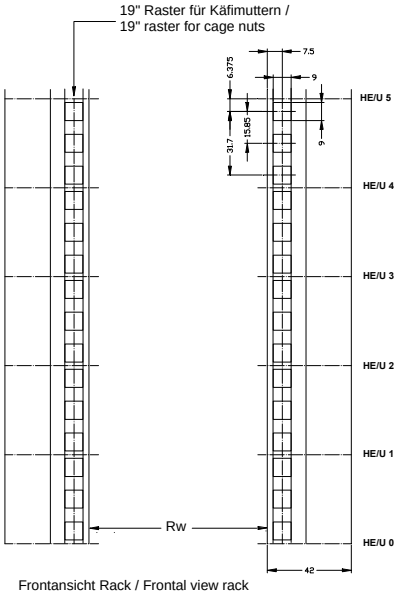
DataCenterRack

rdg008

Carrier profile



Side view carrier profile

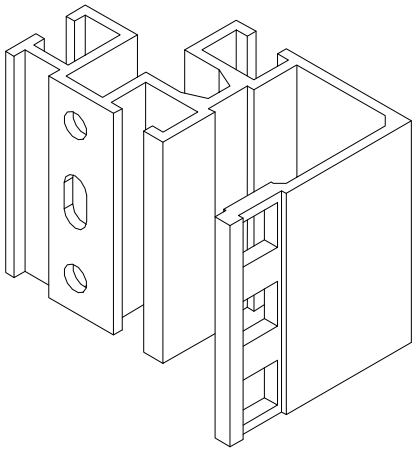


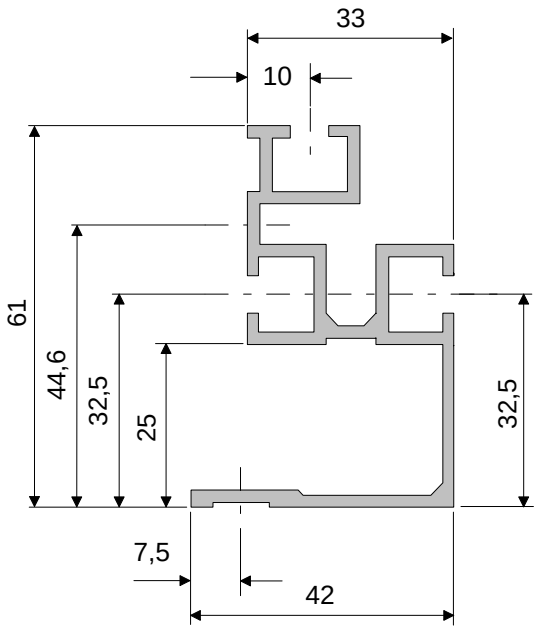
Frontansicht Rack / Frontal view rack

DataCenterRack

Rw --- Rack Einbaubreite / Rack width = 450,5mm +1

rdg006b



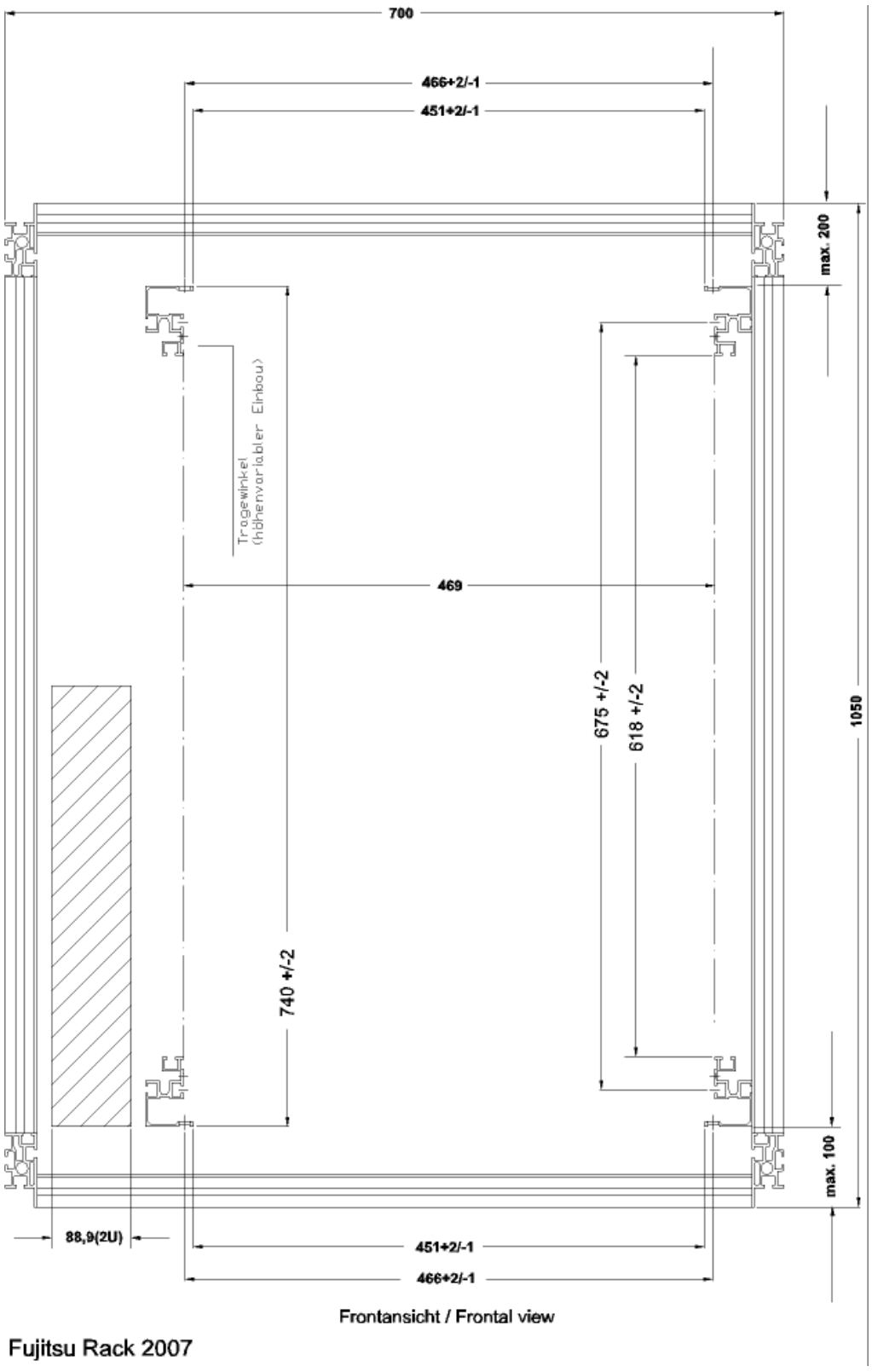


2 mm Alu Stranggussprofiel

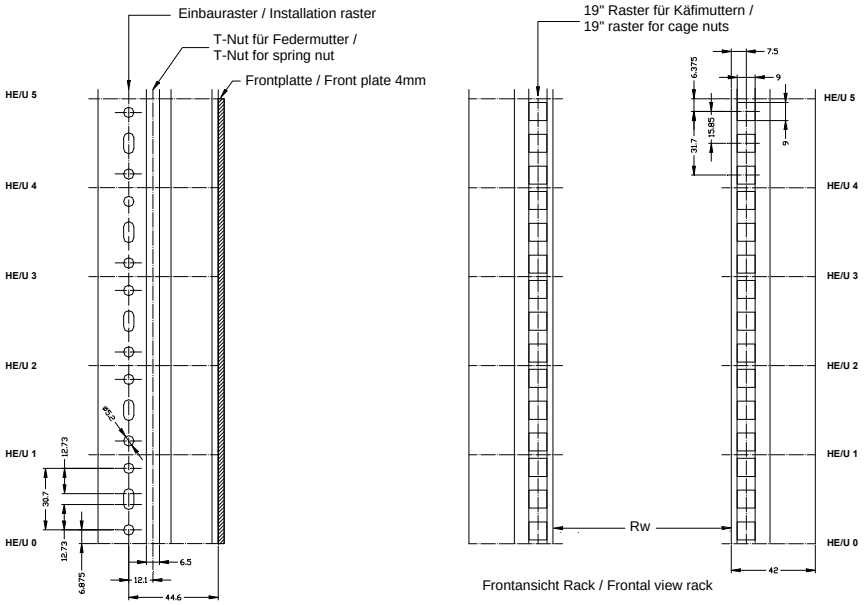
Figure: Vertical carrier profile in 1U DataCenter rack

10.1.2 Fujitsu rack

Layout



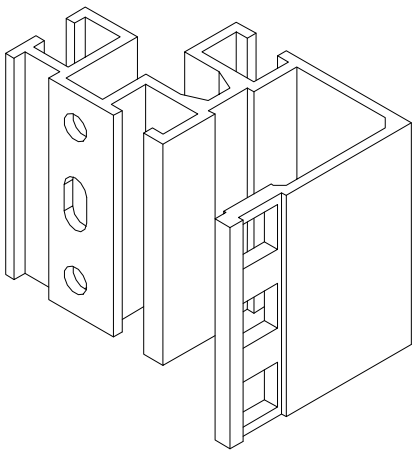
Carrier profile

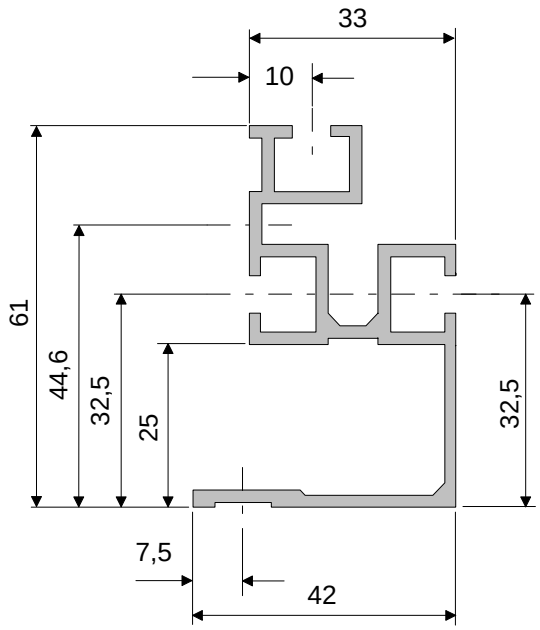


DataCenterRack

Rw --- Rack Einbaubreite / Rack width = 450,5mm +1

rdg006b





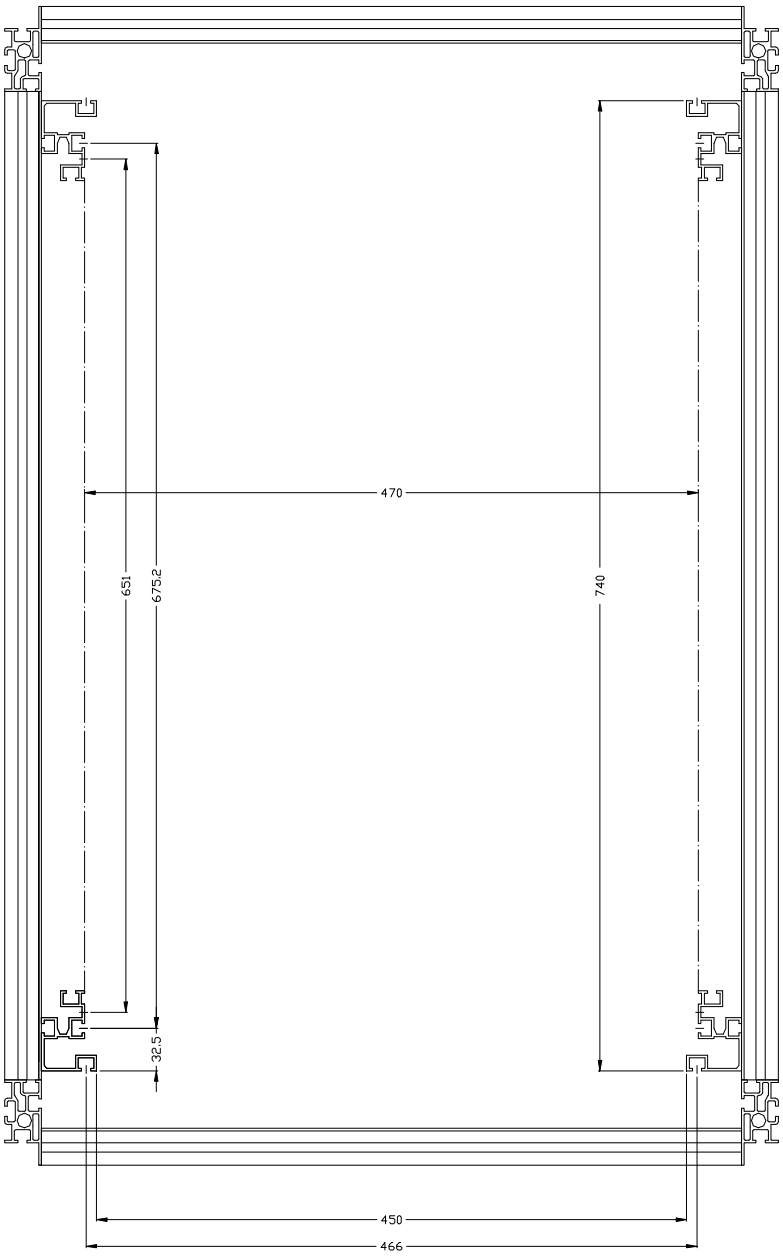
2 mm Alu Stranggussprofiel

Figure: Vertical carrier profile in 1U DataCenter rack

10.1.3 Classic rack

The Classic rack is based on the **Miracel** rack system from the company Knürr AG. It was the first standard rack in the FSC portfolio for integrating 19-inch components. In 2000, it was replaced by the DataCenter rack.

Layout

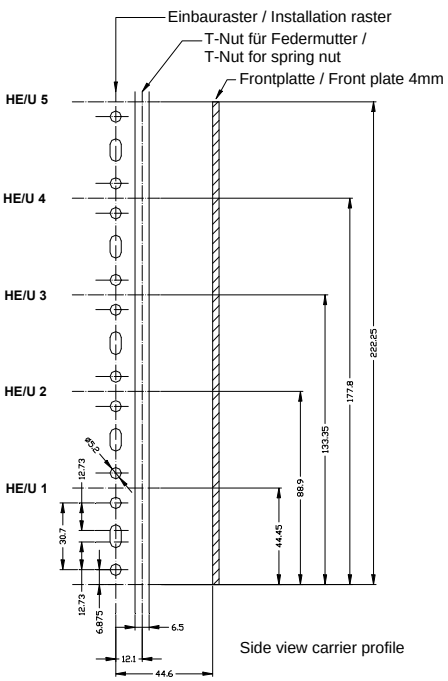


Frontansicht / Frontal view

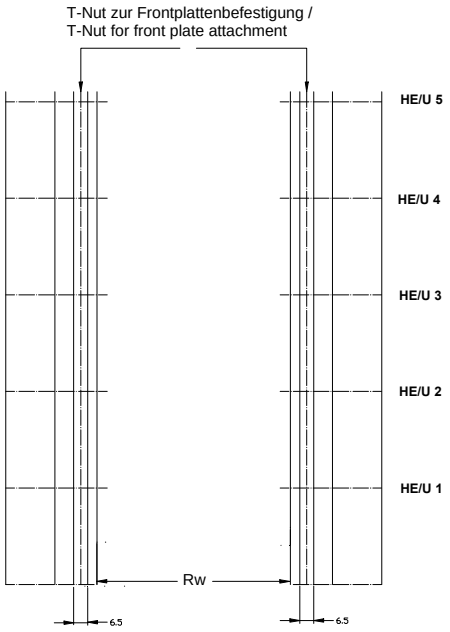
Classic Rack

rdg007

Carrier profile



Side view carrier profile

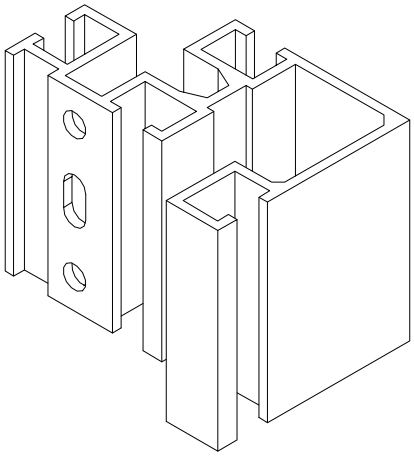


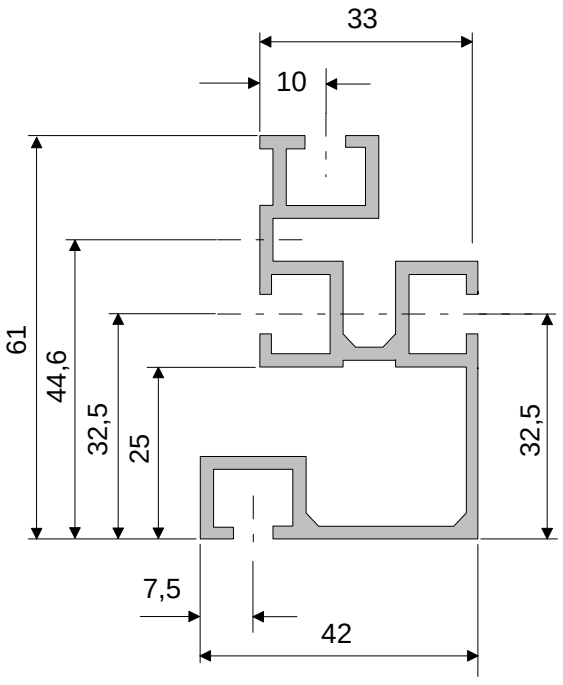
Frontansicht Rack / Frontal view rack

Classic Rack

Rw --- Rack Einbaubreite / Rack width = 450,5mm +1

rdg006





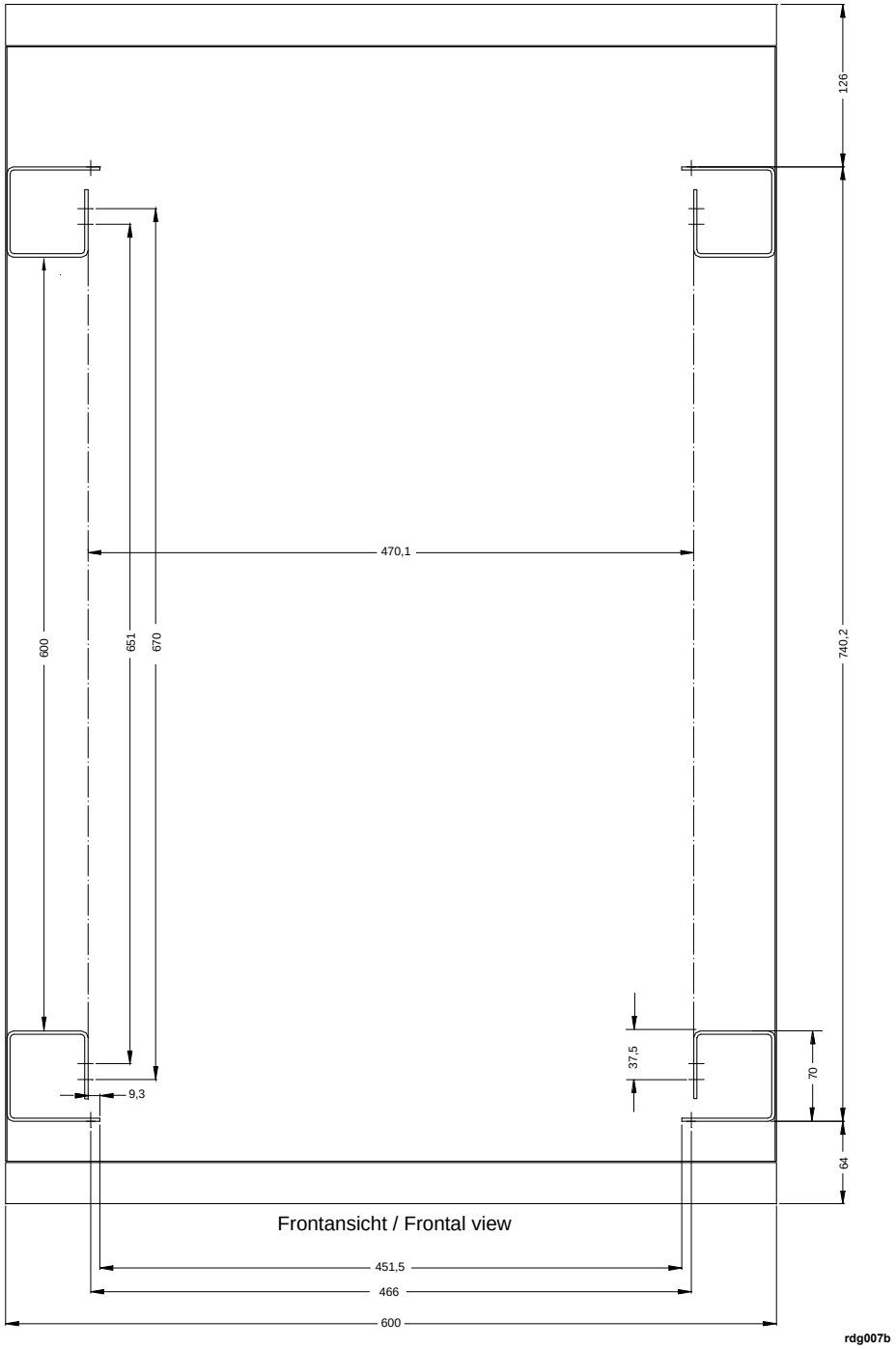
2 mm Alu Stranggussprofiel

Figure: Vertical carrier profile in 1U Classic rack

10.1.4 PRIMECENTER S1 Rack

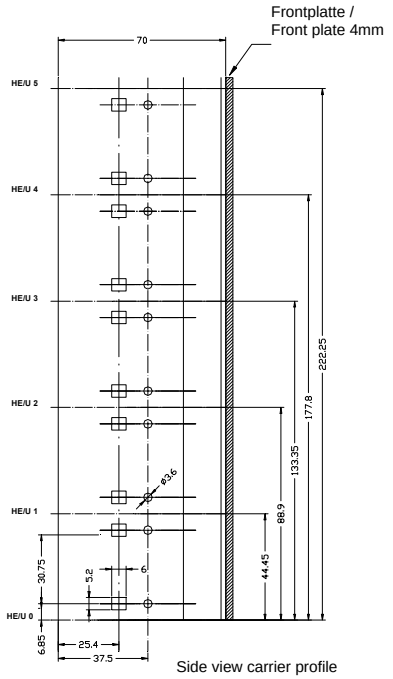
The PRIMECENTER S1 rack was developed by FSC and was the standard rack for RM systems, BS2000 and Primepower servers for several years. At the end of 2002 it was replaced by the PRIMECENTER S2 rack.

Layout

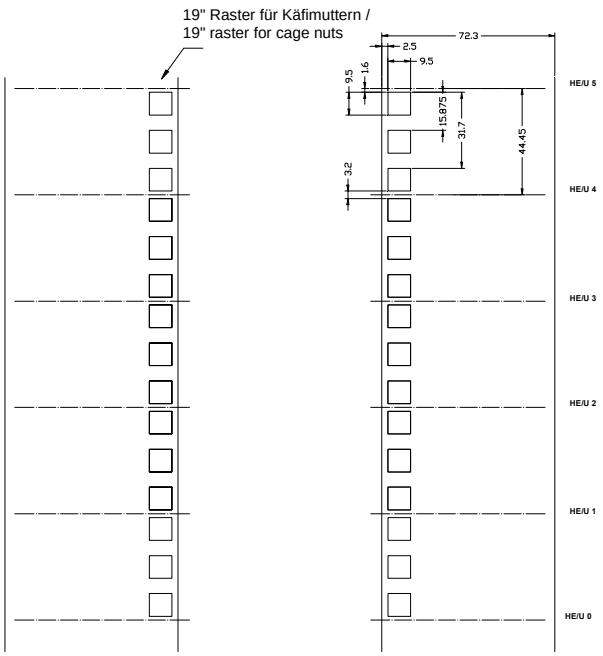


PRIMECENTER Rack S1

Carrier profile



Side view carrier profile



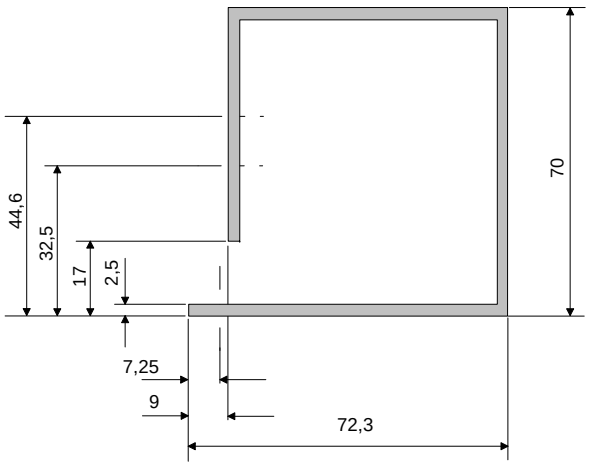
Frontansicht Rack / Frontal view rack

PRIMECENTER Rack S1

Rw --- Rack Einbaubreite / Rack width = >450mm

rdg006d

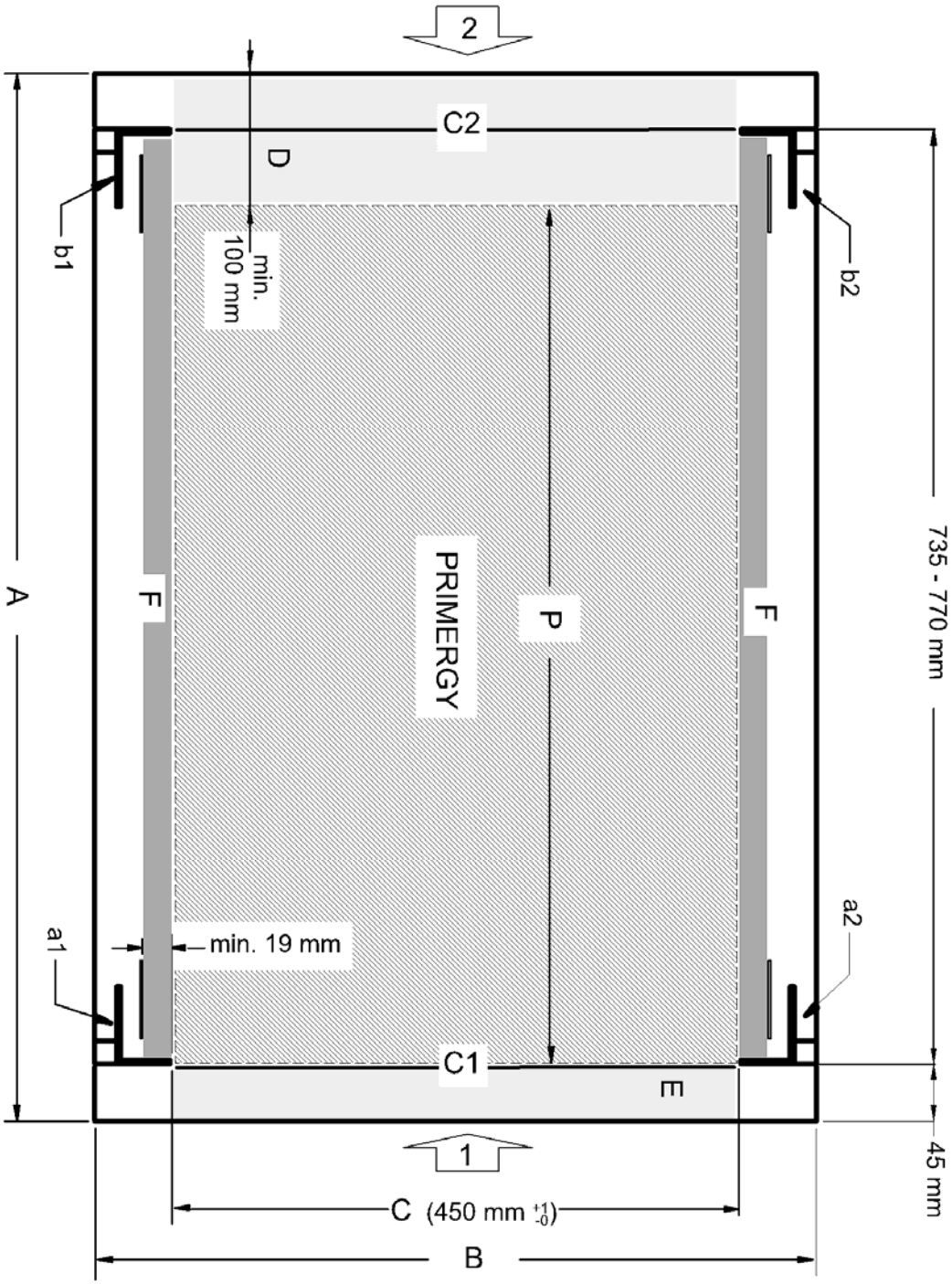
Trägerprofiel Primcenter 1 Rack



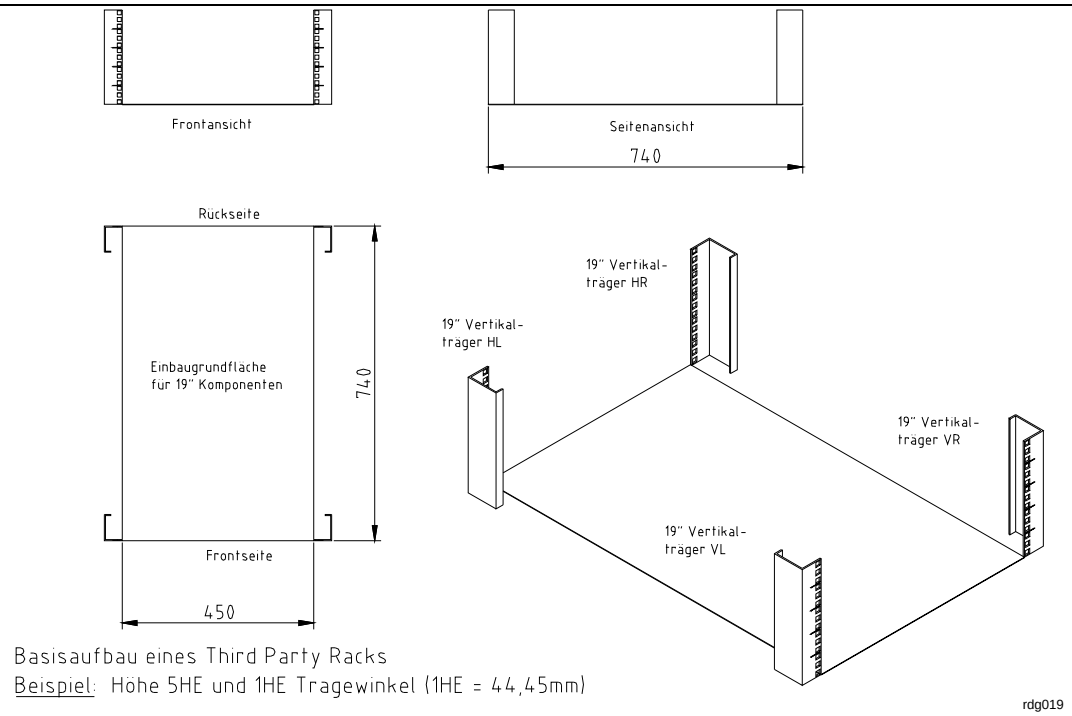
10.1.5 Third-party racks

Rack dimension table

1	Rack front	A	Rack depth	C	Installation plane clearance
2	Rack rear	B	Rack width	C1	Front installation plane
D	Cabling space	E	Front plate design/Air-conditioning	C2	Rear installation plane
F	Carrier system space l/r	P	PRIMERGY installation depth		
a1/b1/a2/b2	Support uprights				

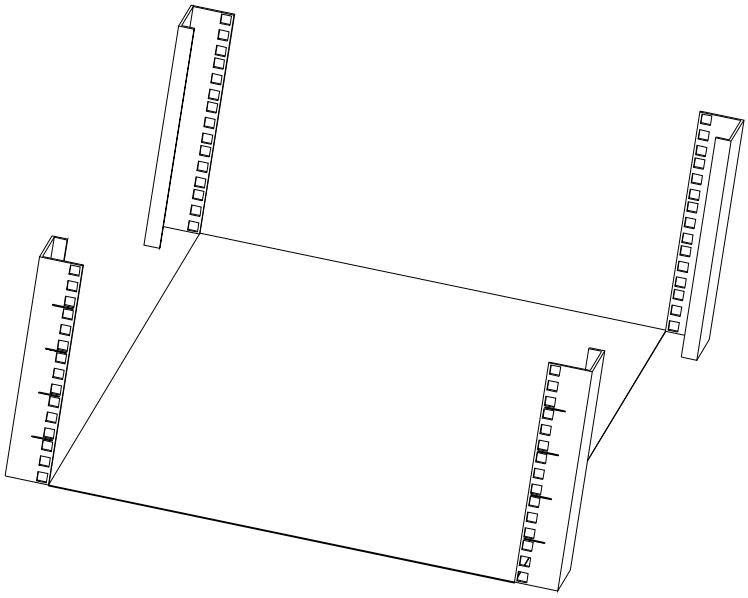


The following figures show an example of the typical structure of a 19” third-party rack for servers.



Basisaufbau eines Third Party Racks
Beispiel: Höhe 5HE und 1HE Tragewinkel (1HE = 44,45mm)

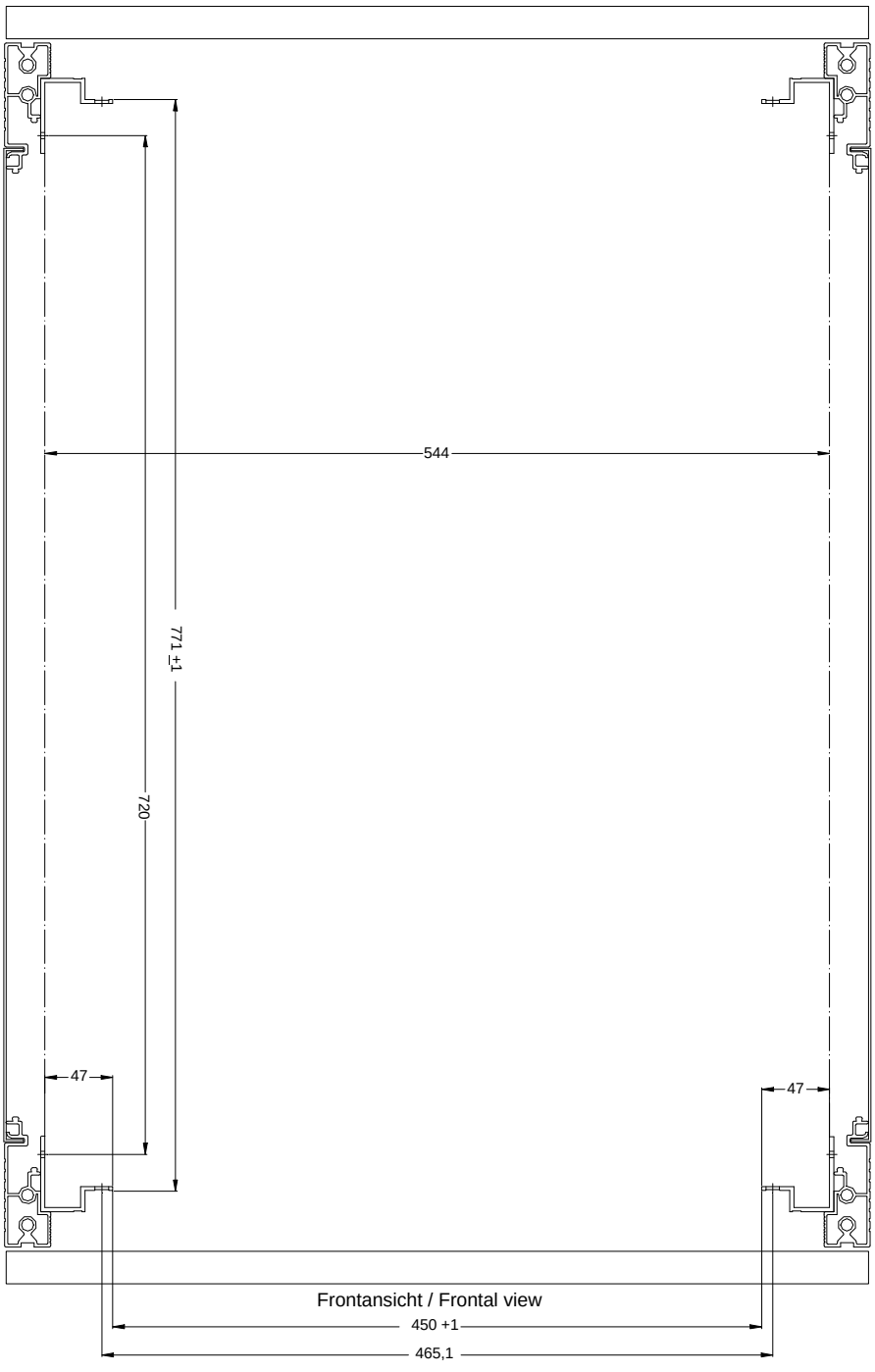
rdg019



rdg018

10.1.6 Example (Rittal DK Server Rack)

Layout



Rittal DK Server Rack

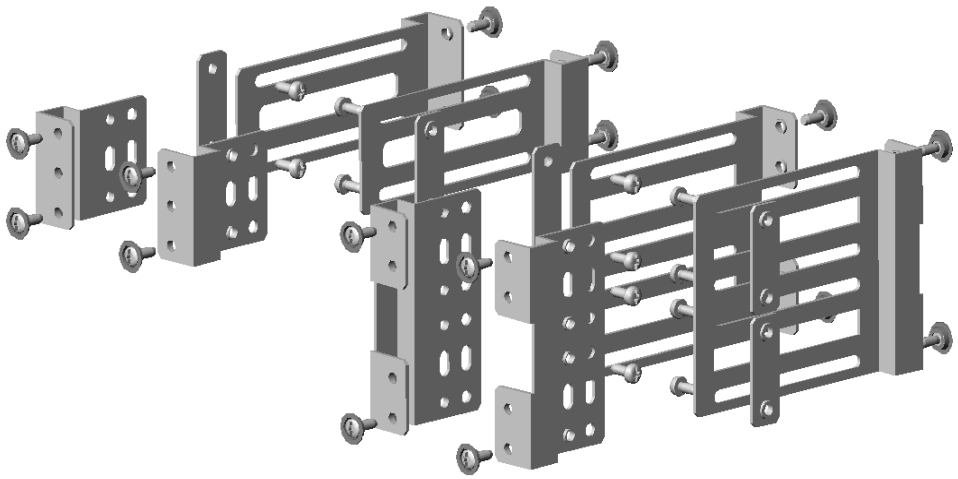
rdg007c

10.2 Adapter kits

10.2.1 Carrier systems from Classic rack -> PCR and third-party racks

The adapter kit S26361-F2734-L14 is used for mounting older support systems which are exclusively designed for the Knürr attachment grid. At the same time it allows devices to be mounted in the PRIMECENTER and third-party racks, as it exclusively uses the square 19” grid for mounting.

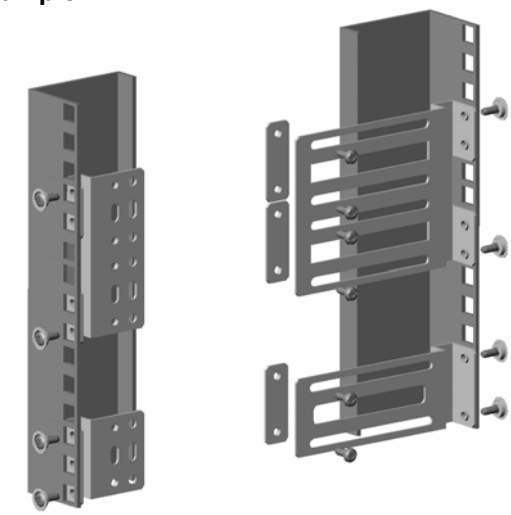
Knürr adapter kit



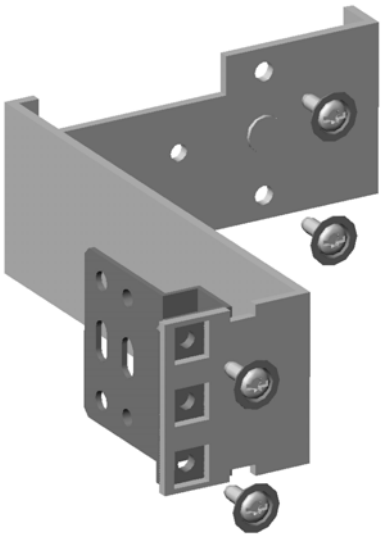
Adapter Kit 1 (Knürr -> DC / PCR)
A3C40038779 S26361-F2734-L14

10.2.2 Mounting examples

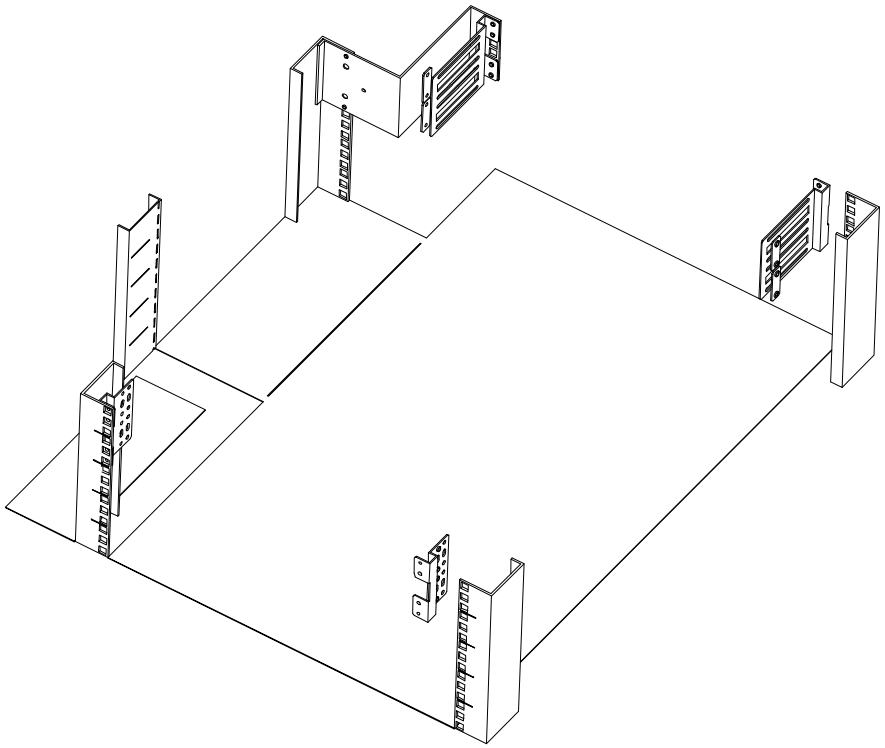
Example 1



Example 2

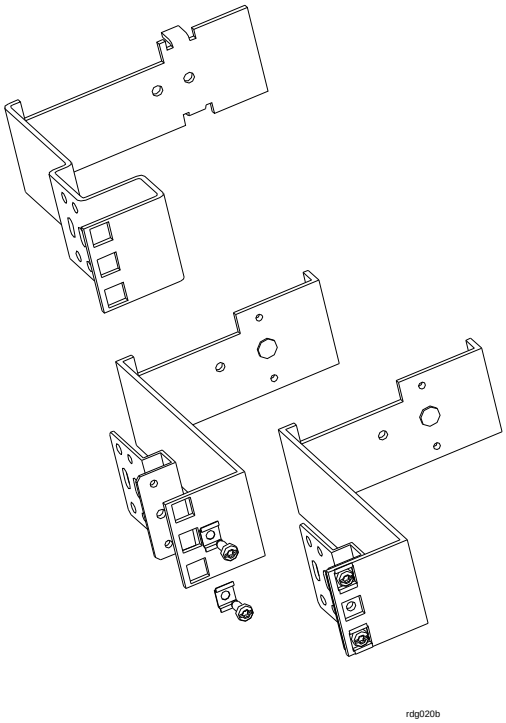


Example 3 shows the reconstruction of the Knürr side brackets for mounting older carrier systems



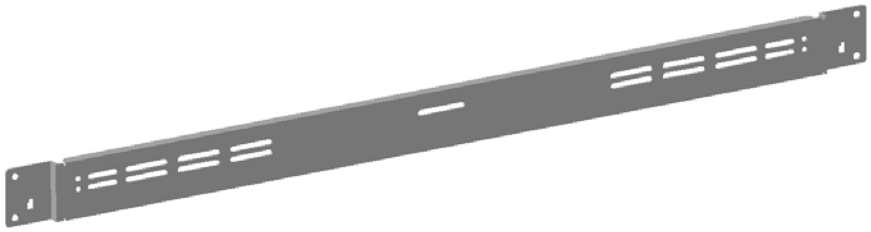
Position of the parts from Adapter Kit 1 (Knürr -> DC/PCR) A3C40038779 S26361-F2734-L14 In PCR II Rack

Example 2 shows the reconstruction of the side grid with a 1U support bracket. The top support bracket in the figure shows the model from the DataCenter rack.

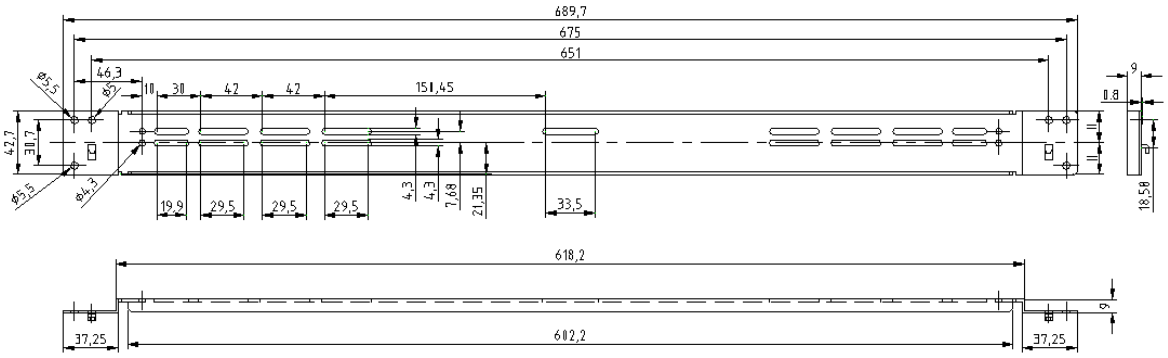


10.2.3 Carrier systems from PCR and third-party racks -> Classic rack

Telescopic rail carrier I Classic rack

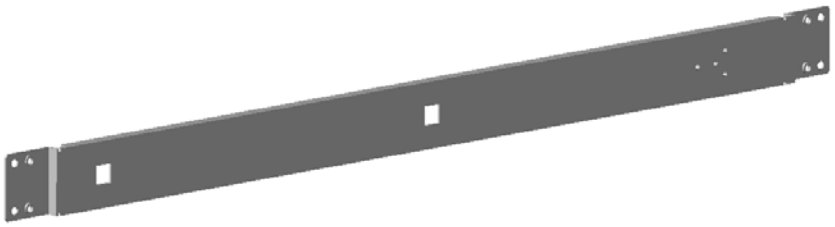


Telescopic rail carrier I Classic rack

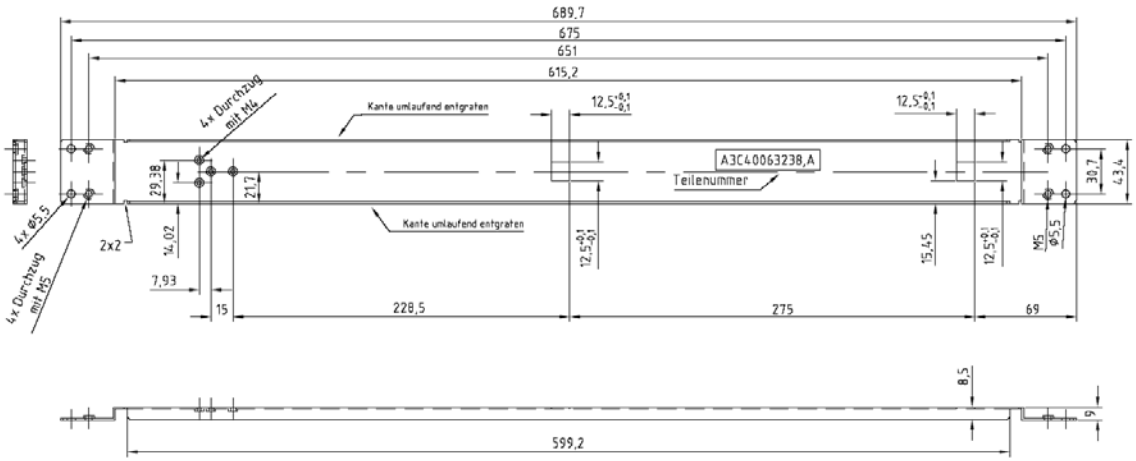


Installation dimensions

Telescopic rail carrier II Classic rack (Teleskopschienenträger II Classic Rack a.bmp)



Telescopic rail carrier II Classic rack



Installation dimensions

Telescope rail carrier II classic rack
A3C40063238 in Adapter Kit I Classic Rack S26361-F1331-L200 / S26361-F1331-L300

10.3 Transport rack

10.3.1 Transport pallet from Knürr (finish end of 2007)

Handhabungs-und Transportanweisung
Hinweise zu Transport, Lagerung und Sicherheitshinweise umseitig
Handling and Transportation Instructions
Notes on transportation, storage, and safety instructions overleaf

Figure 1

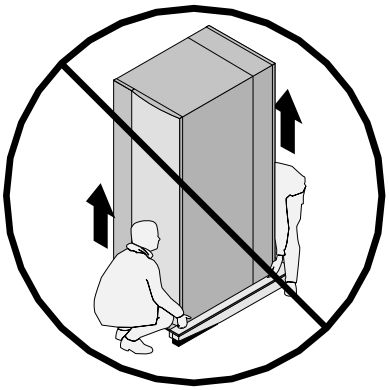


Figure 2

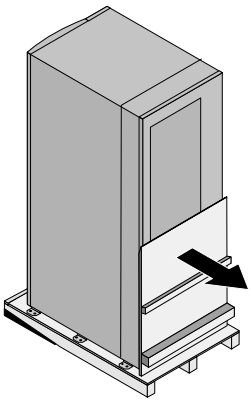


Figure 3

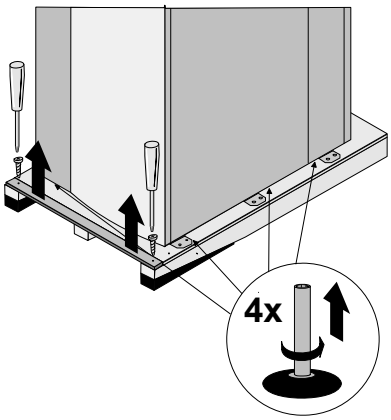


Figure 4

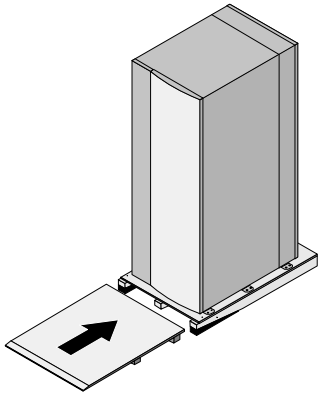


Figure 5

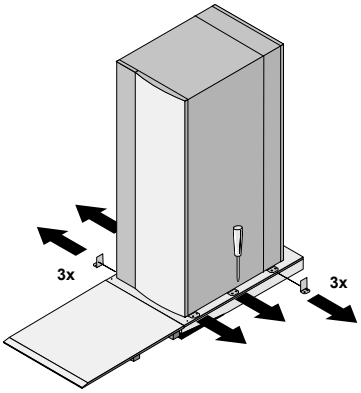


Figure 6

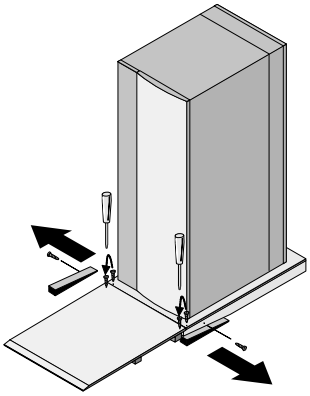


Figure 7

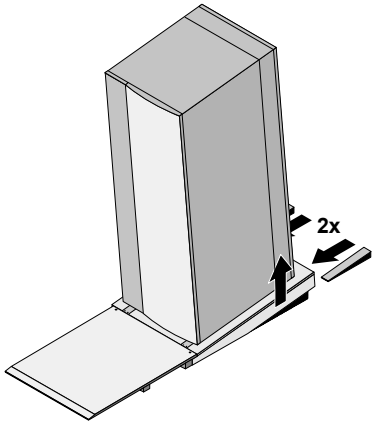
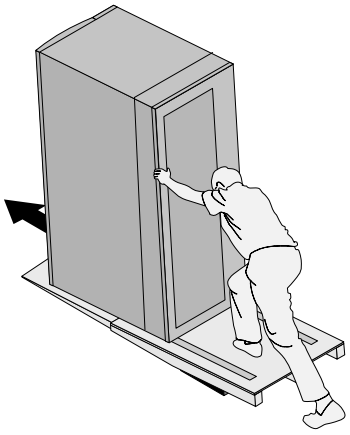
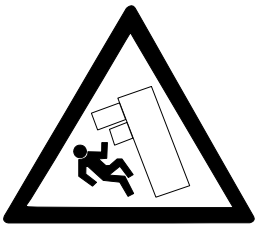


Figure 8

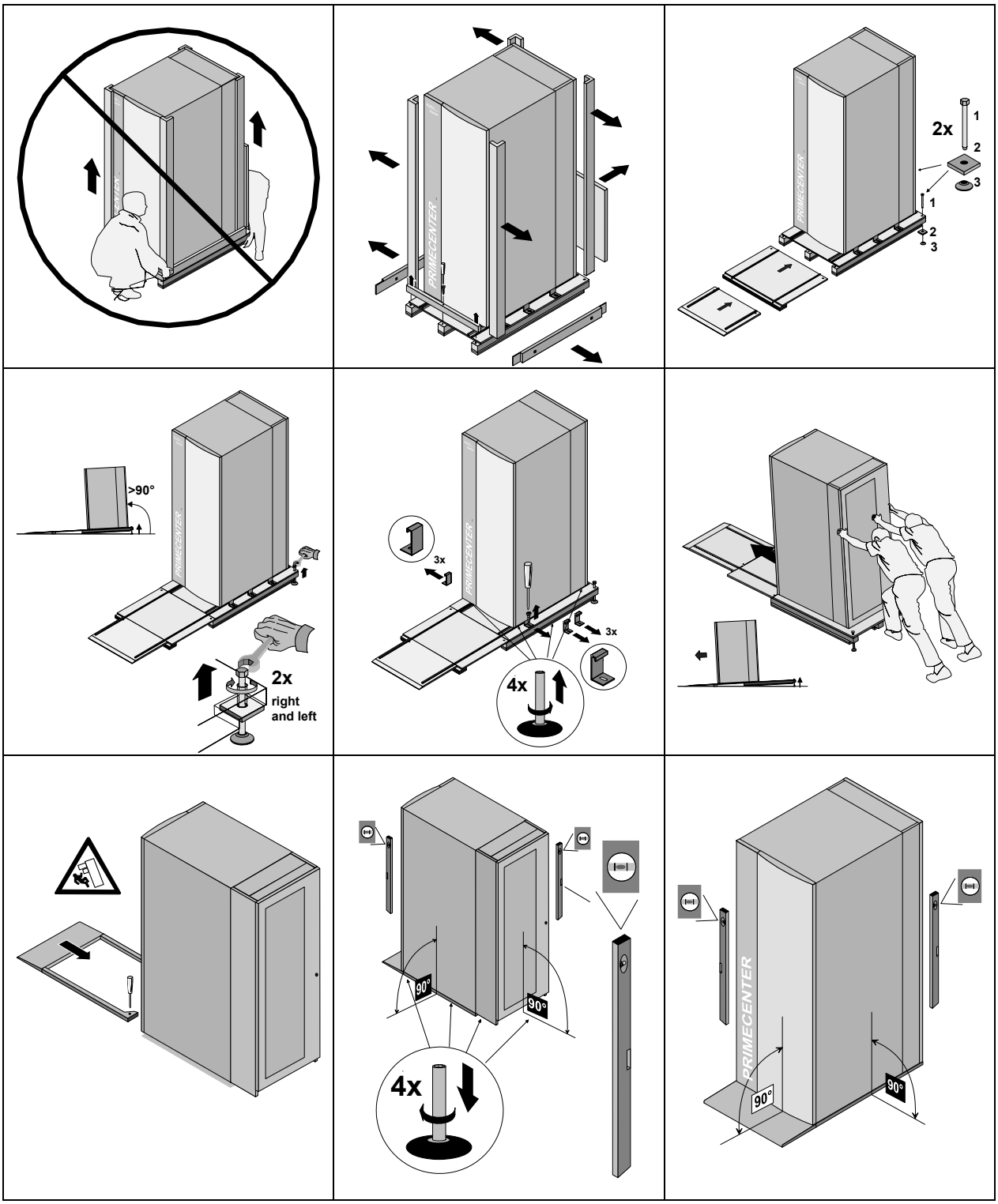


Remodeling



10.3.2 Transport pallet from FSC (1/2008)

Handhabungs- und Transportanweisung
Hinweise zu Transport, Lagerung und Sicherheitshinweise umseitig
Handling and Transportation Instructions
Notes on transportation, storing, and safety instructions overleaf


2x
1
2
3
1
2
3
>90°
2x
right
and left
3x
3x
4x
90°
90°
4x
90°
90°

10.3.3 Notes on transport

Detaching from the wooden pallet

- The unit is seated on the pallet and is secured with 6 metal clamps, which must be unscrewed from the pallet.
- To remove the screws you need a Phillips screwdriver.
- Once the packaging foil has been removed, the unit must be slid off the pallet as shown above.

Transportation and storage

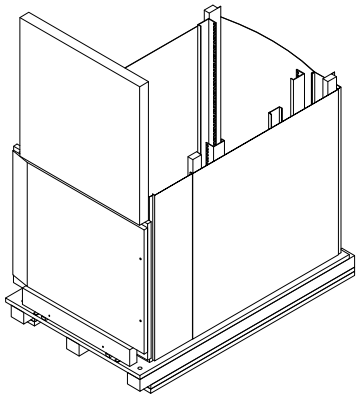
- The following mechanical and climatic environmental conditions according to EN 60721-3-1 and -3-2 must be observed:
  - **Storage: Product class 1M3 / 1K2 1S2**
  - **Transport: Product class 2M2 / 2K2 2S1**
- Attention: When transporting the unit, make sure it does not tilt more than 30°.
- The unit must remain in its original packaging until it reaches the installation location.

Safety instructions

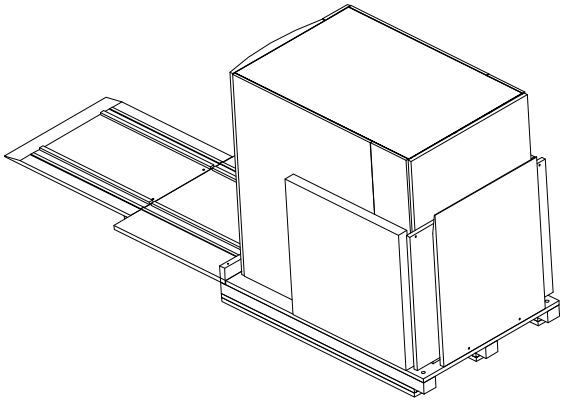
Before components are pulled out or started up, the anti-tilt plate must be installed.

For further important notes on the rack see the Technical Manual "Rack System", chapter 2. You will find the manual in the accessory pack inside the rack.

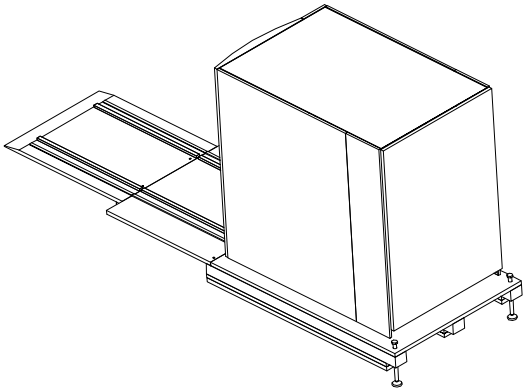
TP_16.wmf



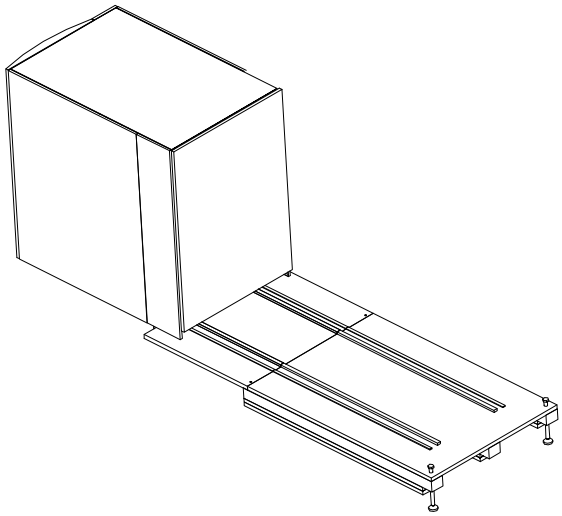
TP_15d.wmf



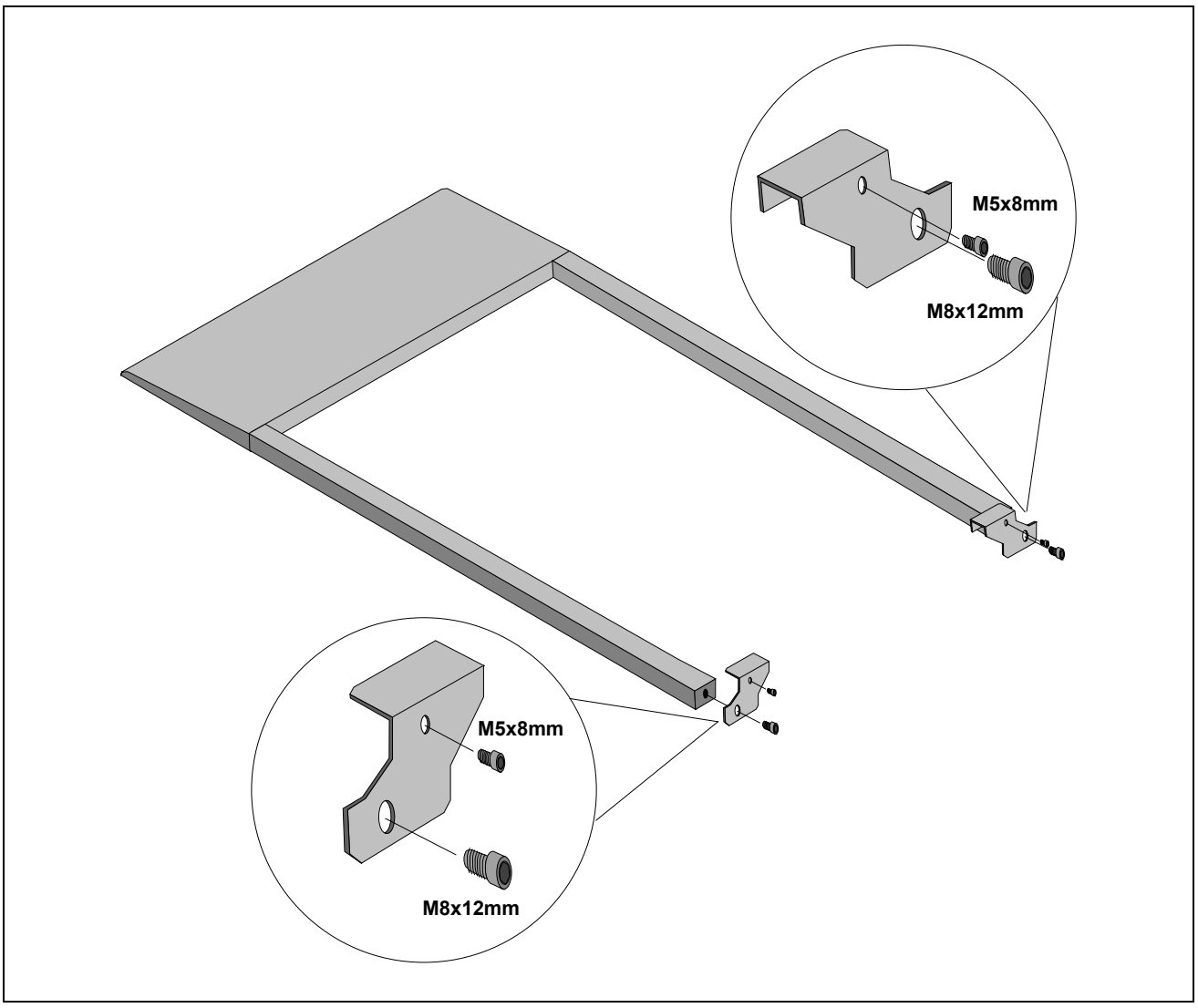
TP_15c.wmf

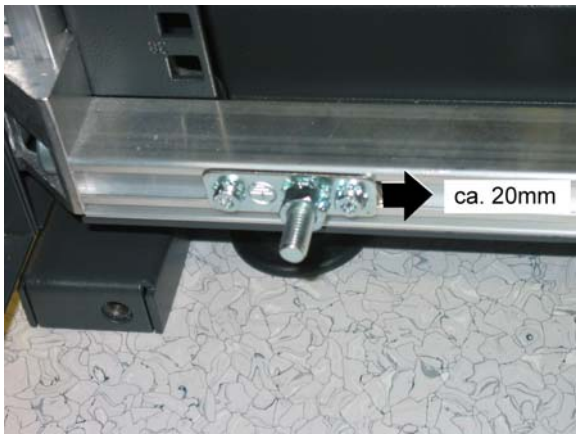


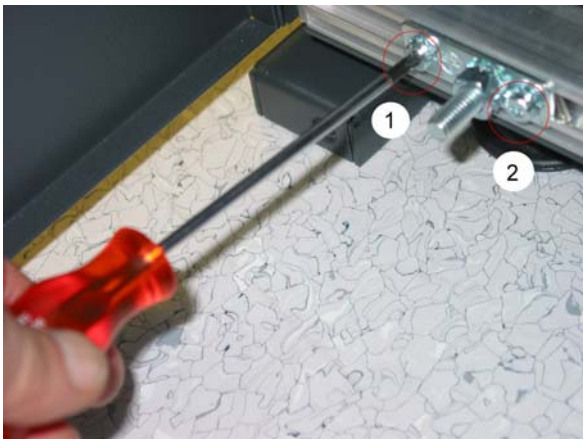
TP_15b.wmf

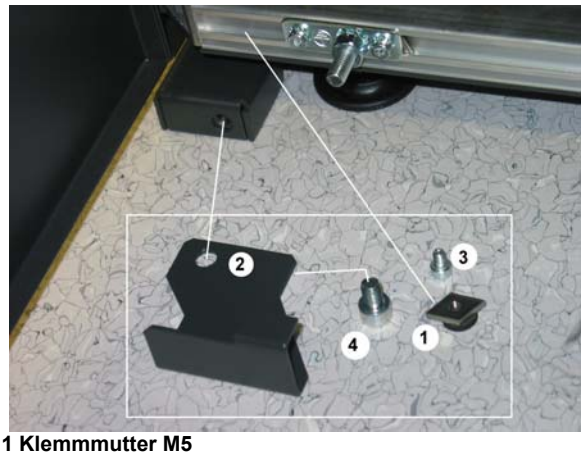


10.3.4 Mounting tilt protection PRIMECENTER Rack (1/2008)

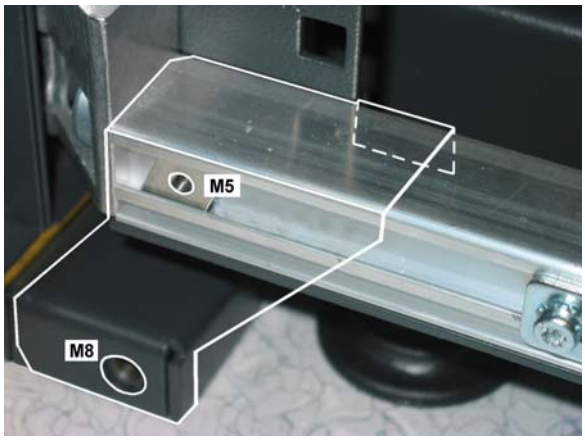






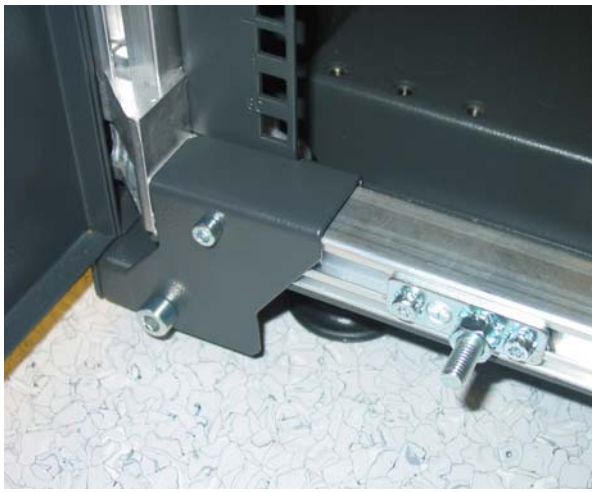


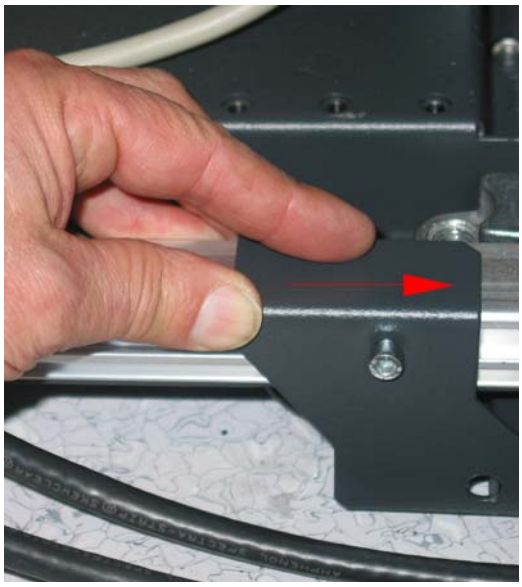
1 Klemmmutter M5
2 Befestigungskralle
3 screw Innensechskantschraube M5x8mm
4 screw Innensechskantschraube M8x12mm

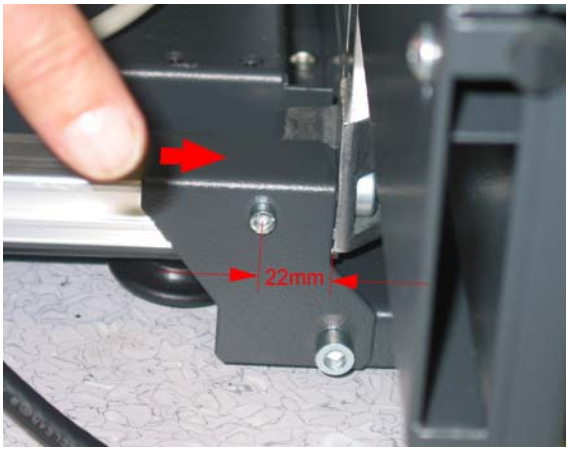


screw M5x8mm (right side Rack)
tool: Innensechskantschlüssel M4

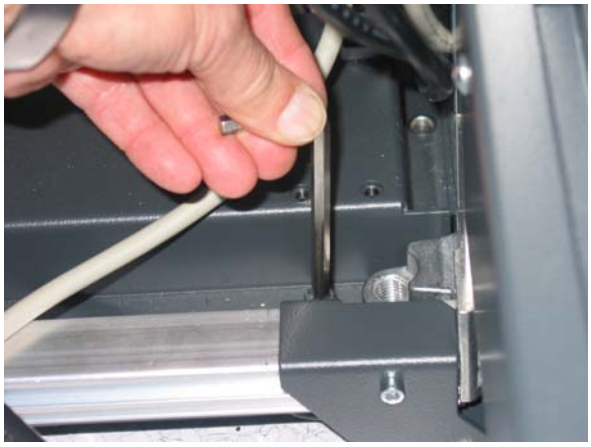
screw M8x12mm
tool: Innensechskantschlüssel M6



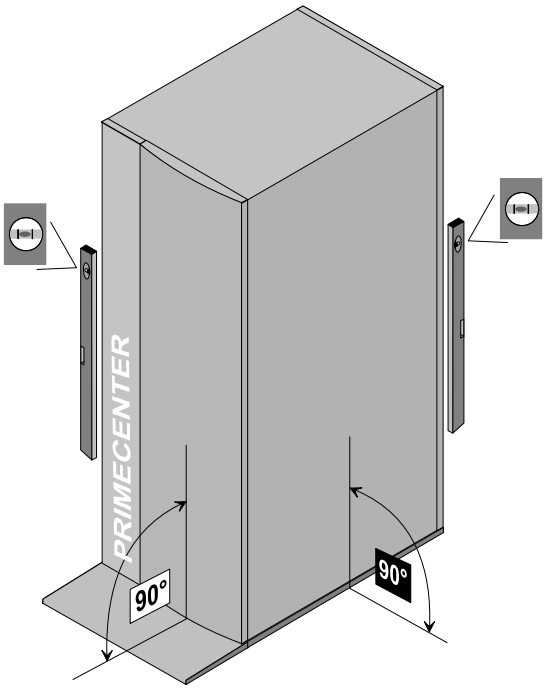




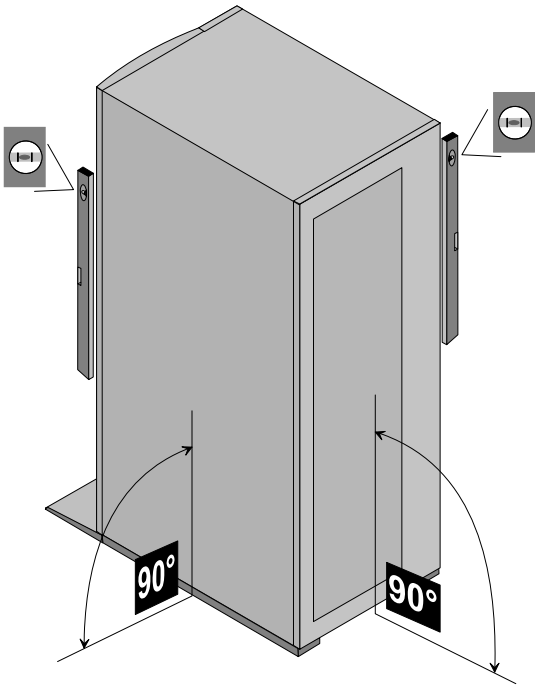
screw fixieren

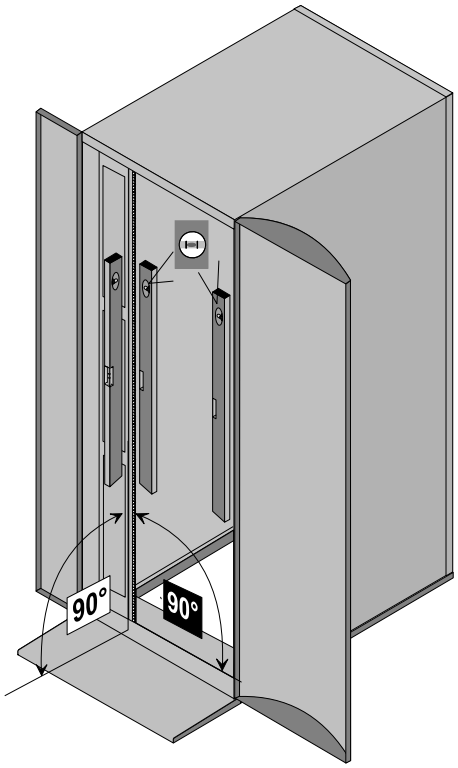


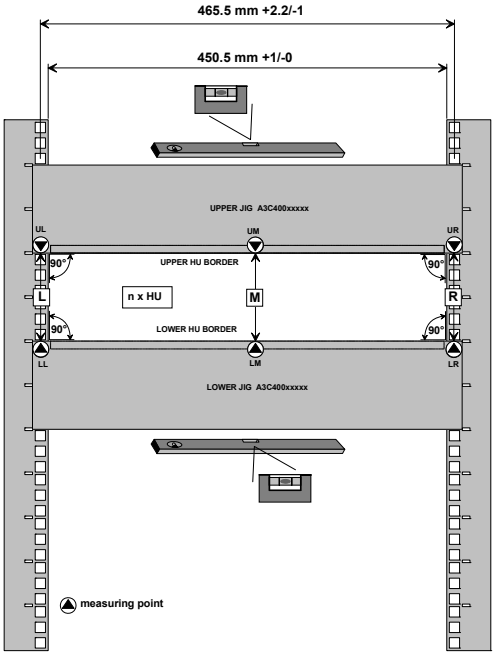
10.3.5 Setting up and leveling the rack



Adjusting the PRIMECENTER rack:
See the technical manual
3 Preparations
3.5 Setting up the PRIMECENTER Rack







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